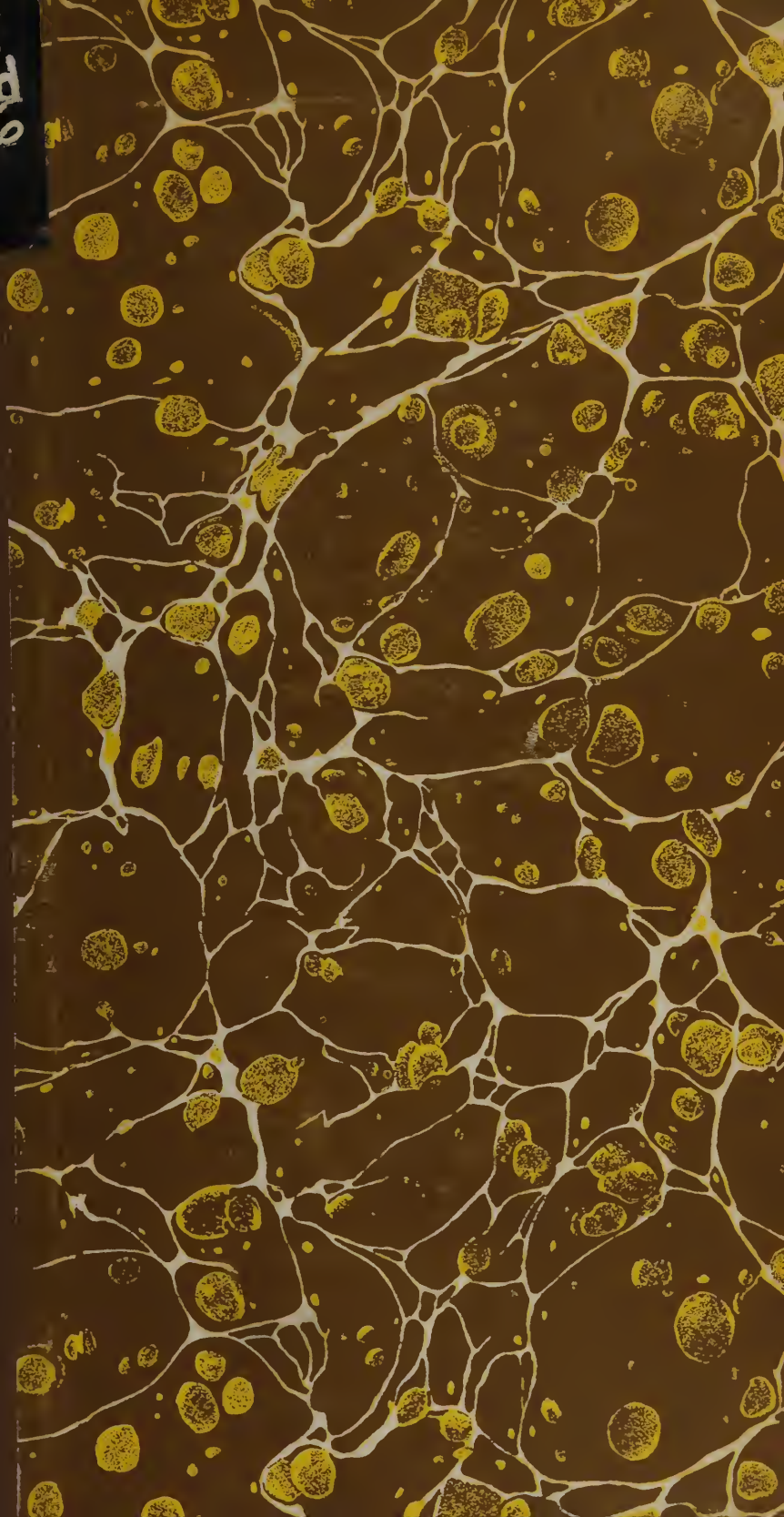


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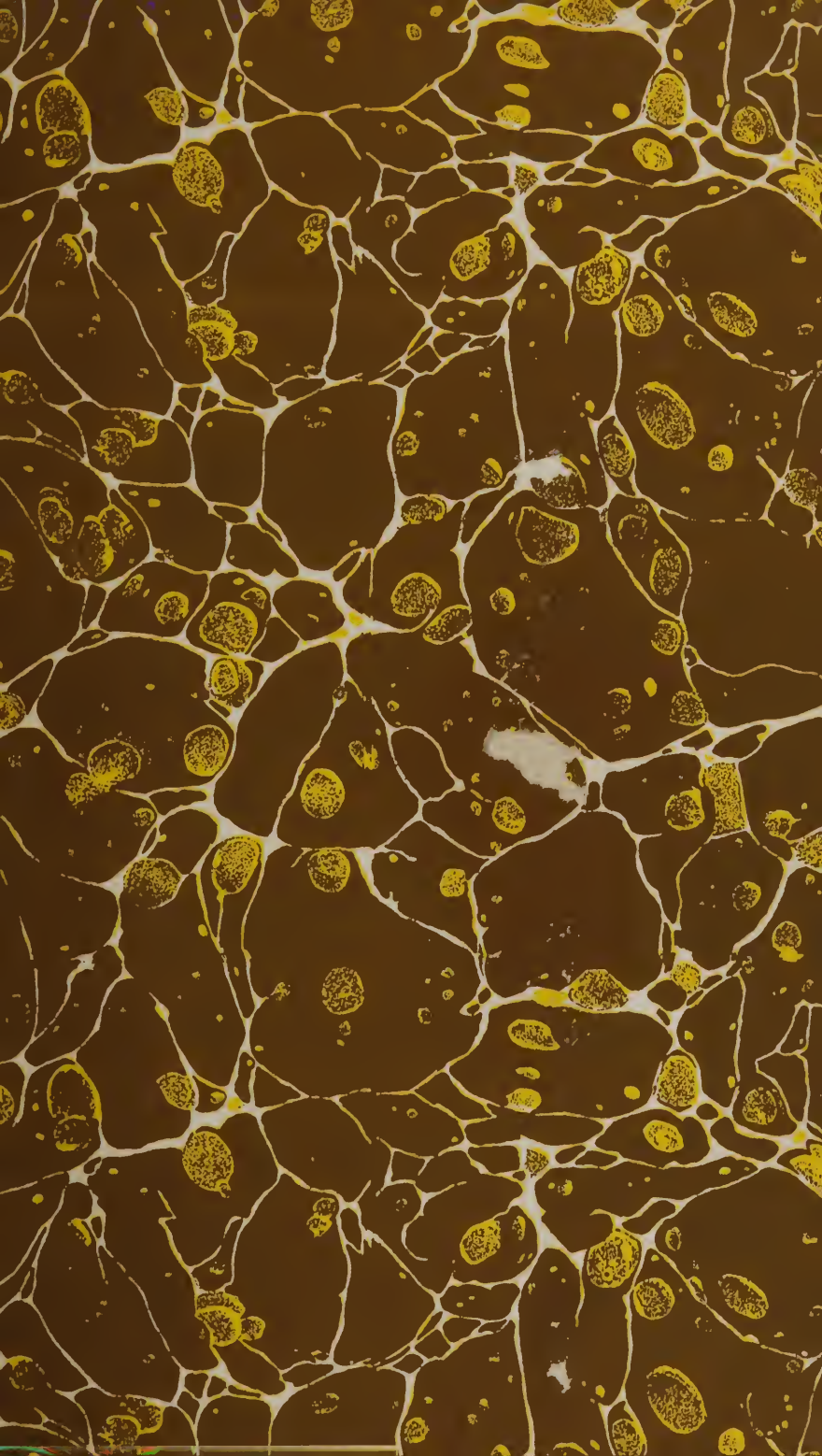


Section .....

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(Revised June 13, 1936)







A

DISSERTATION

12619 ON

THE IMPORTANCE OF PHYSICAL SIGNS,

IN THE VARIOUS DISEASES

OF THE

ABDOMEN AND THORAX.

Je n'enseigne pas, je raconte.

MONTAIGNE

BY ROBERT W. HAYALL, M. D.

OF RICHMOND, VA.



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THE BOYLSTON MEDICAL COMMITTEE OF HARVARD UNIVERSITY,  
awarded a premium of fifty dollars, or a gold medal of equal value,  
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author be considered as bound to print the above vote therewith.

GEORGE HAYWARD, *Secretary.*

## DISSERTATION.

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THE multiform mutations which have attached to medical practice, even since it has justly assumed for itself the appellation of a science, have no doubt contributed in a great measure to lessen the confidence of many an enlightened mind in its utility and benefit. When we consider, however, the exceeding difficulty which attends our examination into the true and infallible causes of disease, and just and rightful appreciation of remedial agents : we reflect upon the absurd and even yet uncorrected aversion to post mortem examinations, we should cease to wonder at the various changes which mere theoretical opinion has hitherto advanced. Physiology, too, from a correct and proper knowledge of which we can alone arrive at sure deductions in our pathological investigations, had, until at a comparatively recent date, established upon immutable foundations many of its present and universally received principles ; and it may without exaggeration be said that the study of disease as cognizable by its functional signs or symptoms, was the only mode adopted until very recently,

by every medical observer. As diseases were consequently viewed in different ways by differently educated and original intellects, we have an additional explanation for the many and diversified systems which have shared the common fate of a short-lived reputation. The man who wishes to bestow a lasting benefit upon the science, must enter upon the examination of disease with a determination to doubt every thing which cannot be *proved*;—hypothesis must cease to be the groundwork upon which medicine is to rear her shrine, and the deductions which ought to be esteemed legitimate, should be those only which can be drawn from incontrovertible analysis. We are constrained to admire, it is true, the graphically descriptive histories of Sydenham, and to yield an assent to the inductive reasoning which he instituted in opposition to the authoritative dogmas of the schools. Considering the condition of medicine at that period, it undoubtedly became indebted to him for a greater usefulness and extension of its resources; and in questioning Nature, as he seems most diligently to have done, had he passed beyond the threshold of her temple and found his way into its more secret and intricate recesses, he would have remained a prominent example of one of the greatest reformers in medical opinion.

Although the close observation of general symptoms, or deranged function, (we mean such as may be considered apart from the physical signs hereafter to be noticed,) is a work of much practical importance to the physician, yet do they lose much of their real value if they cannot be ultimately referred to the pathological condition or lesion from which they proceed. The simple phenomenon of fever for example, may belong to an inflammatory state of various organs, and were there not other signs existing to locate the diseased viscus, the probability that a correct diagnosis would be made, or a successful treatment instituted, would be slender indeed. Were it the case, however, on the other hand, that this same phenomenon of fever was always and



only observed in the morbid derangement of one particular organ, the physician who by repeated autopsies should demonstrate its invariable location, would at once afford all the information that could be requisite. Now, although the supposition we have here made is not true, and although many symptoms are developed in every disease, yet does it sometimes happen from the similarity of general symptoms in affections totally different, that the most discriminating intellects are occasionally embarrassed; and it need not be told that to a faulty diagnosis must succeed a practice, useless to say the least, if not positively injurious.

Of all the diseases which affect the human body, the foregoing remark is more certainly true of affections of the thoracic than any other cavity; in almost every instance, serious derangements of the brain are marked by symptoms which belong to no other malady, and the yielding walls of the abdomen will allow the necessary means to be used in discovering an enlarged viscus, or the true seat of pain. The knowledge too of symptoms differing from those of a general character, in the numerous diseases of the chest, derives an additional importance from the fact, that the gravest complications are attended by functional symptoms of nearly the same import with those of a far less alarming nature. In chronic bronchitis, for example, we have cough and purulent expectoration and hectic, nor do we always have more from the ulcerated cavity of phthisis;—yet the one is a disease curable in its nature, while the other bids defiance to the best directed resources of the art; and in all the diversified and numerous affections of the thoracic organs, we constantly notice a certain train of nearly similar symptoms, such as cough, and dyspnoea, and expectoration,—nor does it always happen that their frequency or intensity invariably corresponds to the extent of the organic lesion to which they are to be referred. And how unfortunately true has it now been made to appear, that in very many protracted diseases of other organs, death hurries its victim to

his final home, not so much in consequence of *their* ravages, as from an accession of pulmonic or bronchial inflammation? And if it be asked, whence the importance of this information, it may be replied that without it your patient certainly dies, while with it, it is possible to save; and even were it not so, it cannot surely be unsatisfactory to know what lesion had supervened sufficient to arrest the wheels of life.

The value attached to general symptoms not being always such as to leave the observer entirely without doubt as to the nature of the disease with which he is called to contend, presents a difficulty oftentimes harassing to the sensitive mind, and invariably perplexing to the diligent inquirer after truth; and he who should dispel this doubt, by the discovery of a certain set of signs which could belong exclusively to but one disease and to no other, would, and ought to be hailed as one of the greatest benefactors to the human race. This discovery has been made in relation at least to one important class of diseases; to those, namely, which appertain to all the thoracic organs; and to Laennec belongs the honor of having first promulgated this most beautiful system.

It is true that something had been done in relation to the diagnosis of disease by its physical signs, anterior to the time of this celebrated professor, by both Avenbrugger and Corvisart; but the plan of the former was necessarily imperfect, inasmuch as it was confined exclusively to percussion, and therefore not always perfectly free from obscurity; and that of the latter, although it might be denominated the method by auscultation, was yet entirely too limited in its application, and too defective in its manner. Had he survived a few years longer, he might have gone hand in hand with his able pupil, and have contributed to rear a system which leaves now but little to desire; that he would not alone have carried it out into all its details is more than probable, inasmuch as he seems never to have advanced beyond a certain point; and if Laennec may not be considered the pioneer in

this department of medicine, we must at least yield to him the palm of subsequent and more important discoveries.

These discoveries may not probably be considered altogether accidental, for he was governed in his first essay by the knowledge of a fact which may be traced even to the remote period of Hippocrates. We allude to the fact that the action of the heart may be heard by the observer placing his ear upon, or even approximating without touching the præcordial region. All that Laennec has since done, may be regarded as an extension of this long acknowledged circumstance; for he very justly concluded that if it were easy to appreciate one set of sounds within the hidden recesses of the thorax, it might not be impossible to detect others even of less intensity. In 1816, a female patient presented herself with the general symptoms of an affection of the heart, in whom, on account of her embonpoint, percussion alone gave but very uncertain signs. Delicacy forbade the employment of immediate auscultation, and the well known principle of the transmission of sounds by means of solid bodies, paved the way to those splendid results which have done so much towards establishing an almost faultless diagnosis in diseases of the chest; and hence originated the instrument called the stethoscope.

From the improvements which have shed such new and unexpected light upon the diagnosis of disease within the last few years, may we not be permitted to argue much in favor of the future? And perhaps it may not be transcending very far the bounds of rational expectation, should we predict that at some future time this department of the science will stand upon the basis of a demonstration almost mathematical. What Laennec has so triumphantly done for affections of the chest, Andral and Louis and Ribes have nearly completed for another class of diseases, the pathology of which has been, and is now by the many, so imperfectly understood. We have reference to typhus and typhoid fevers, and to those which have received the name of essen-

tial or idiopathic. Nor should we act justly did we not add to the category of distinguished names just mentioned, that of Abercrombie, who has effected not a little towards a just elucidation of other diseases of the abdominal organs.

If the committee had propounded their question in a different form, and instead of asking, How far are the external means of exploring the condition of the internal organs useful and important?—had they made the inquiry, Are not those means oftentimes *necessary* to the formation of a correct diagnosis?—we think that even under this aspect it might have received an affirmative response. And if this assertion be substantiated by what will be said hereafter, what a weight of responsibility must attach to those who attempt to pursue the practice of their profession, while yet ignorant of *any* of the means by which they may be enlightened; and if we are enabled to employ them, what a consolatory reflection must it not afford us, to know, that every circumstance by which we could have availed ourselves had been put in requisition, although our best efforts had proved but impotent!

In entering upon the discussion of this interesting subject, the only course which it seems to us can be advantageously pursued, will be to show the uncertainty which frequently rests upon a diagnosis derived from general or functional symptoms, and the surer dependence which may be placed upon those which are called physical. To accomplish this task in its *full* extent, would require a volume of some considerable size, which we have not the leisure nor the ability to produce. Our chief end shall therefore be to include such diseases only as are of commonly recognized occurrence, and some few others which, although often misunderstood, we have reason to believe are not by any means rare. Our remarks too will be confined to affections of the thoracic and abdominal cavities, while on account of the bony casement which surrounds the brain and its membranes, no observations arising from an external examination in their diseases can probably result; with the exception perhaps of a few instances

strictly surgical. And if we occasionally wander from the prescribed limits of the question, and enter upon the field of pathological inquiry, it will only be with a hope of giving an additional interest and a clearer elucidation to the subject.

It may be observed before we proceed farther, that all the different organs of the abdomen, including the several portions of the intestinal tube, afford a sound peculiar to themselves upon percussion. It hence follows that the abdominal surface may be divided into various regions, to each of which and to none other, belongs a peculiarity of resonance. Individual organs may thus be exactly circumscribed in extent, and the deviations in sound mark to the experienced ear their abnormal conditions. To the exceeding nicety however requisite in these examinations, we can lay but a slender claim, and he who would be desirous of following them out into all their details, will derive ample information from the work of M. Piorri, published in 1828. That he has not raised a theory without abundant facts to support it, we have evidence enough from the little experience which we ourselves possess.

### *Abdominal Diseases.*

*The Liver.*—We should not probably deviate far from the truth in making the assertion, that a greater obscurity attends the various diseases of this viscus, than of any other abdominal organ, except perhaps the spleen. That a knowledge however, of its functional symptoms can avail us nothing, we not only do not say, but admit that it is frequently necessary in conjunction with the physical signs, to the formation of a clear diagnosis. Nay, we will even go further, and say that the union of the two cannot always enlighten us as to the exact affection which may exist.

For several years we have entertained the opinion founded upon the observation of many cases, that there was in the whole range of functional symptoms but one which had an



invariable and permanent existence ;—we mean the appearance of jaundice, which is only *constant* where there exists some obstruction in the ducts. In all the other presumed affections we have noticed, it has by no means been a diagnostic or even a permanent symptom, for we have seen active and chronic congestion with it and without it ; and the same remark may be made in relation to hypertrophy and atrophy, hydatids, cancerous and fatty degenerations, induration and abscess. It is certainly impossible to offer a positive explanation of the existence or non-existence of jaundice in these different affections, in the present state of the science ; and a similar position may be advanced in reference to the discoloration of the feces and the yellow appearance of the urine. Much yet remains to be accomplished by patient and repeated observation both during life and after death.

Nor can we always speak positively as to the location of *pain* which sometimes exists and at others does not ; and when it does, we cannot be entirely certain that some partial peritonitis in the immediate neighborhood of the liver, or inflammation of the diaphragmatic pleura, or rheumatic affection of the abdominal muscles, may not exist as the true lesion. In inflammation of the pleura lining the diaphragm we are in truth subjected to a still farther deception, for cases have occurred where jaundice has been added to the train of symptoms, arising beyond doubt from sympathetic irritation. Misapprehension may also arise by referring the seat of pain to the liver, when in reality it has its existence in an inflamed pylorus or duodenum.

Having thus stated the ambiguity which attends the two most prominent functional symptoms in the diseases of the liver, we shall proceed to designate a few, and endeavor to point out that combination of general and physical signs which may lead to a clearer diagnosis than could be derived from a separate consideration of the one or the other.

In simple inflammatory engorgement whether active or

passive (chronic), we may or we may not have all the functional symptoms, as pain, jaundice, discoloration of the feces, and coloration of the urine; (I make no mention of a coated tongue and fever, inasmuch as they are common to nearly every disease to which the human frame is liable.)—And should every one of these symptoms supervene, a combination which does not always happen, how do we certainly know that this particular disease exists, when each one has been observed in some different affection? We must resort then to some other sign, and we find it in the abnormal peculiarity which both percussion and palpation presents. This peculiarity takes place in consequence of the distended viscus passing beyond its accustomed limit into portions of the abdomen where it does not naturally belong, and by the sensation which we are able to recognize by the touch. It is astonishing to notice the extent to which this enlargement may occasionally proceed. Andral relates a case where the liver was found occupying not only the epigastric, but a portion of the left hypochondriac region, and extending to within a short distance of the crest of the right iliac bone.

The tumor formed in simple active or passive engorgement is found to be smooth, without prominence or depression, and in consequence of its affording a dull or flat sound on percussion, we may thus measure the extent to which it has attained. We know the regions occupied by the stomach and the ascending colon; and we know too that as they are hollow organs, percussion will elicit a certain resonance peculiar to each one; now, if this resonance is replaced by a dull and flat sound, and we are enabled by the touch to trace a continuous enlargement beneath the cartilages of the ribs, we have every reason to ascribe it to an altered condition of the liver. Whenever too the tumor exists to any considerable degree, there is an evident alteration in the *form* of the abdomen; the ribs are rendered more prominent, as well as that portion of the abdominal surface situated to the left and below them.

A general enlargement of this organ is not uniformly the result of those causes which produce hepatitis ; for numerous autopsies have demonstrated the fact that one or the other lobe may be separately engorged, and so far as the left lobe is implicated, the local signs which have been enumerated will suffice. The right lobe may be alone engorged and distended to such a degree as considerably to impinge against the diaphragm, and thereby cause an interference with the free action of the lung ; and from this source we derive one of our diagnostic signs, for the application of the stethoscope will reveal to us an absence of respiration in that portion of the chest where it ought to exist ; and percussion will furnish another proof in the presence of a dull and flat sound where it ought not to be. It may perhaps be objected to each of these positions that a similar result might be produced by a different complication, as for example by a pleuritic effusion ; but a little attention it seems to us will cause the difficulty to vanish. When effusion has taken place, there is it is true, a dull sound upon percussion and an absence of respiration ; but we have other symptoms, as will be shown when we come to speak of diseases of the chest ; and we ought not to lose sight also of the fact, that the primary symptoms of pleurisy could hardly have been mistaken by the physician or forgotten by the patient. Besides, the dullness of sound produced by effusion will be found by no means so intense, as that occasioned by the presence of an engorged liver.

There is another condition where the liver forms a considerable prominence, not only in the epigastrium, but even in the left hypochondrium, and yet it may not be in the least diseased. This deceptive form of enlargement results either from a very copious effusion into the cavity of the right pleura, or from the growth of some abdominal tumor pushing it beyond its proper limits. In addition to the physical signs developed upon percussion and auscultation, of a pleuritic effusion, there is an absence of any functional symptom which might mark a disease belonging properly to the liver itself ;

and we are thus enabled, from a union of these two considerations, to arrive at a conclusion approaching to certainty in our diagnosis. Should the hepatic prominence be the effect of the second cause we have just mentioned, much more difficulty we admit may arise, and thus render the case a doubtful one ; but yet not invariably, for there are instances where the tumor may be distinctly traced beneath the protruded liver, while the epigastric border of this organ may be felt reposing upon it, and not reaching to the entire extent of the tumor itself.

Another variety of hepatic engorgement is occasionally met with, which upon its first occurrence at least, or even when often repeated, is the result of a purely mechanical cause ; it arises from an obstruction to the equable flow of the blood through the hepatic veins, in consequence of disease of the right side of the heart. In its inception, as we have said, this engorgement acknowledges only a mechanical cause, and so long as the vital actions remain undisturbed, we notice no sympathetic febrile affection ; and an additional peculiarity may be remarked, which if it be not pathognomonic, will at least lead us to examine into the heart's functions. We allude to the *intermission* so frequently noticed in this form of congestion. For a day or two, or longer, the liver remains more or less enlarged, exhibiting none, or a scarcely appreciable deviation in the healthy play of its functions, and then unexpectedly returns to its normal dimensions. From the frequency however with which this occurs, its vital actions may become implicated, irritation supervenes, is prolonged by the engorgement continuing longer than usual, and finally inflammation with all its characteristics forms the last link in the chain. Patients have died from the complication just described, and without a knowledge of the heart's disease, the wonder has been what *miasmatic* influence, or what sudden impression of cold when every care had been so assiduously taken to guard against it, could have produced a hepatitis. Although somewhat foreign

to our subject, we may here be allowed to remark, that hepatic congestion in one or the other of its forms, is very often consecutive to an acute or chronic duodenitis. Many autopsies have demonstrated this fact, and unless we very carefully analyze and understand the symptoms peculiar to each, we may be led into a double error; the one an error of diagnosis, and the other of treatment. The uncertainty as to the proper location of pain even when augmented upon pressure, and the early appearance of icterus and whitish evacuations lead us to locate the lesion solely in the hepatic organ; and dose after dose of some drastic cathartic, while it fails to cure the consequent, cannot do otherwise than augment the antecedent disease. Ere long the nervous centres become involved, the pulse is hurried and compressible, the teeth are fuliginous; the tongue is hard and blackened or shining and furrowed; stimulant after stimulant is poured down upon viscera which *cannot* react in consequence of the overwhelming inflammation which these very remedies have produced, and death finally comes to the relief of the unfortunate patient. Is this an overwrought picture? By no means. How many have been taught to see in this catenation of symptoms the true evidences of *debility*, and how many will not bear witness to the mournful truth that they have seen their patients sink time after time in despite of bark, and wine, and brandy. That they do not always sink, is owing to the gratifying circumstance that nature will sometimes conquer both the disease and the physician.

If we expect to draw an indication as to the positive nature of many other affections of the liver from its functional aberrations, we shall find ourselves exposed to uncertainties, similar to those already cited. We will therefore endeavor to point out a few local signs which may assist us to form a proper opinion.

The liver consists, in its general structure of two distinct formations; the one a whitish substance of considerable density, inclosing and supporting blood-vessels of various



diameters, but without permitting their indefinite and diversified ramifications; the other substance is a red and highly vascular parenchyma, situated within the interstices of the first, and eminently capable of undergoing a change either in the diminution or augmentation of its volume. When we make a section of the organ in a state of health, the peculiar structure we have indicated may be recognized, but much more clearly however in a diseased condition. Either one of these formations may be separately affected; in the one we may discover hypertrophy of its tissue, while that of the other remains undisturbed, and vice versa; or the one may be subjected to an increase in its nutrition, while the other suffers a diminution, or both may be simultaneously diseased in whole or in part.

We have recurred to this feature in the structure of this viscus, for the purpose of explaining more satisfactorily, the peculiarity which its hypertrophy gives to palpation, when carried to an extent sufficient to produce a tumor. The touch then recognizes a tumor of greater or less size, presenting manifest *inequalities*, in consequence of every portion of the organ not being similarly hypertrophied; the white or red substance being alone altered, or both in unequal degrees. Hypertrophy is rarely or never met with as an idiopathic affection, but may be considered the result of an inflammation primitively chronic. From this circumstance we can scarcely confound it with active engorgement, leaving out of the question the assistance we are enabled to derive from local signs; for there is an absence of those sympathetic disturbances which almost invariably characterize that affection.

The morbid increase of the nutritive function expressed by the term hypertrophy, being the result of primitive chronic engorgements, may exist as such for a longer or shorter period; but it is frequently noticed as the second link in that chain which ultimately terminates in disorganization, and autopsy reveals the existence of fatty substances,

tubercular excavations, and cancerous degenerations, depending doubtless upon constitutional idiosyncrasy. If we have had an opportunity of following the case from its commencement, and if we have noticed the inequalities upon the surface of the tumor, we shall by and by find that they have gradually disappeared, wholly or partially, and been substituted by well-marked depressions; and from this local sign we draw the conclusion that softening or ulceration has supervened, the final step in the process of disorganization. That a cancerous affection of the liver may be primitive, there is abundant evidence to believe; and when it forms a perceptible enlargement, its surface will present to the touch numerous corrugations or small prominences which finally terminate in ramollissement. Here then the physical signs present a similarity in this disease and tuberculous degeneration, and tend very much to obscure the diagnosis; and although it may often be impossible to speak assuredly, yet may we derive some assistance from the character of the *pain* which accompanies the two affections; in the former it is acute and lancinating, while in the latter it is rather a sense of indescribable uneasiness, amounting but seldom to positive pain.

Abscess of the liver may be the result of external violence, of injuries inflicted upon the head, or of active inflammation produced by some other cause. We recognize this condition by the various signs heretofore mentioned; and should shivering sensations be experienced towards the close of the acute stage of hepatitis, observation authorizes the conclusion that an abscess has formed. If it be deeply seated, there may be no perceptibly circumscribed tumor, and the general enlargement may present to the touch all the characters of simple engorgement. When, however, it becomes more superficial, the tact of the skilful experimenter will, if he cannot detect a fluctuation, very clearly discover a *yielding* surface beneath his fingers, surrounding which he will mark the hard, and dense, and unaltered substance of the liver.

Besides this, percussion will here come in to our aid, and the difference in the resonance will denote the extent of the purulent collection ; the sound being duller over the healthy portions of the viscus, in consequence of its greater density.

From numerous autopsies made at La Pitié under the direction of M. Andral, in hepatic diseases, where dropsy has been the result, the fact has been ascertained, that effusion much more frequently succeeds to a diminution or atrophy of the organ than to any other affection. The diagnosis is rendered much more obscure in consequence of the very frequent absence of functional symptoms. A local examination, when the abdomen is not excessively distended, may lead us to suspect the true lesion, by observing that the liver does not reach its normal dimensions ; and if the patient be placed in an erect position, we can discover an unnatural increase of resonance upon percussion. We may also be assisted in our efforts at a correct opinion, by questioning the functions and physical condition of other organs, the lesions of which may result in effusion. Has the ascites been produced by disease of the heart ? We recognize by means of the stethoscope its healthy condition ; and we know too that when effusion has followed as a sequence to its disease, its very first appearance is discoverable around the malleoli ; and it is not until some time has elapsed, that upper portions of the inferior members and the abdomen become implicated ; or, has it been the effect of peritonitis in either of its forms ? Neither the patient or his attendant could have mistaken the earlier symptoms which so well characterize the inflammation of this serous membrane. By thus excluding all other organs which may be found in a state of health, or upon the morbid condition of which, such and such symptoms could *not* depend, we may be enabled to locate the lesion by inference at least, and address our remedies to the proper point. It may not be unimportant to state, that a similar method of investigation will frequently avail much in other affections.

The various tunics which enter into the composition of the gall-bladder, the cystic and hepatic ducts, and the choledochus common to the two, are liable to the same morbid alterations that are discoverable in other organs; and these tissues may be separately or simultaneously diseased. The functional symptoms of icterus and discoloration of the feces, are constant in some of these lesions, but yet are incapable in themselves alone, of indicating the exact affection; some of their diseases too, with the aid both of general and local symptoms are recognizable only after death. Whatever cause, operating mechanically, produces an obliteration or offers an obstruction to the free course of the ductus choledochus, will give rise to the two symptoms. With respect to those causes which are *purely* mechanical, and which act in no other way than by obstructing the canal, may be classed the different varieties of calculus, whether primitive in their formation, or the result of the inspissation of the ingredients which enter into the composition of the bile. The general and functional symptoms dependent upon this condition are known to all; the pain is frequently exquisite, and as the biliary fluid can find no exit, and its secretion still goes on, a reflux into the gall-bladder takes place, causing its distention and thus forming a tumor. In inflammation of the mucous lining of this duct, the cystic, and the gall-bladder itself, we also are enabled to discover a tumor by the touch, which will afford indications of increasing pain or pressure; while in the case of a mere mechanical obstruction, this will not be observed at least in so great a degree. The reason here is obvious; in their diseased conditions the vital actions are exalted, sensibility is increased, and pain is the consequence.

The situation of the tumor formed by the distended gall-bladder, will generally be found immediately under the cartilaginous border of the ribs, in the position which it naturally occupies; but, when the augmentation is great, it may be felt lower down in the right hypochondrium; and

some cases are on record, where it has occupied a portion of the epigastric region, or reached to within a short distance of the iliac crest. Where the swelling is very perceptible, independently of the aid to be derived from the occurrence of jaundice and whitish stools, we may be much assisted in the diagnosis, by ascertaining that the liver itself does not pass beyond its proper limits ; and percussion too, yielding a sound not so flat as it would do, were this organ the point upon which it was made, offers an additional ground upon which to form an opinion. A circumstance peculiarly characteristic, of an enlargement of the gall-bladder, ought not here to be overlooked, and it is in respect to its *form* ; the tumor in the two cases which we have ourselves observed, and in several which we have seen reported, is always *pear-formed*, whatever may have been its state of distention. In one case where the gall-bladder was itself the point of lesion, it was exceedingly sensible to pressure ; while in the other, depending upon a temporary obliteration or obstruction of the common, and possibly of the cystic duct, it was movable and indolent.

We shall not in this place attempt to point out all the alterations of texture which the various ducts, as well as the receptacle of the bile itself may undergo ; as we have said above, some are not clearly discernible until after death ; and it is only by inference that we can form an opinion during life. It may be remarked, however, that the inflammation of the mucous tunic of the ducts and gall-bladder, may terminate in ramollissement, ulceration, and finally perforation. This last complication, should an adhesion not have been formed with some portion of the intestine, is probably always productive of a fatal peritonitis.

This part of our subject we cannot dismiss without saying a word or two relative to the treatment in hepatic affections ; and what is it ? Why, in this country and in England, the moment a yellow sclerotic and whitish evacuations are observed, all the changes are rung upon the various combina-



tions of *mercury* and its different modes of administration. The bowels must be purged, for they are slow to act, and they require the stimulus of the bile which nature has provided for them; and as a substitute we throw in twenty grain doses of calomel, and proportionate quantities of jalap, and rhubarb, and colocynth; with these remedies we fail, and we resort to muriatic acid internally, to nitro-muriatic baths, and to dandelion, and still we fail; and finally we arrive at the conclusion, that to the incurability of the disease must we attribute our ill-success. True, the disease is incurable; but have not these very remedies rendered it so? They have in our opinion contributed to excite still further the already actively inflamed mucous membrane of the ducts, the gall-bladder, or the parenchyma of the liver itself; and thus they tend to increase and prolong the affection they were expected to alleviate. But let us act rationally upon this subject, the true principle of which is to remove by agents purely anti-phlogistic, and not attempt it by exciting cathartics, the stage of active inflammation. By these means we shall proceed with greater security, and when once the inflammation is subdued, the bowels return to their proper condition, and the selerotic to its natural whiteness. The first case of inflamed gall-bladder which we witnessed, was characterized by both functional and local symptoms, and how speedily did it yield to moderate venesection, to leeches to the anus, and to cataplasms! We do not mean by what we have said, entirely to proscribe the use of mercury; but the state of acute phlogosis to which we have alluded, is not the one wherein it can be beneficial.

*Spleen.*—We have not a great deal to say with respect to the diseases of this organ; that but little aid is to be derived from functional symptoms, is not by any means surprising, when we reflect that we are probably altogether ignorant what those functions are. Who has not seen its enlargement to a very great extent, exist for years, and yet witnessed no material derangement if any, in the healthy economy of

the system? We have at this moment under our care, a little patient from the country, about twelve or thirteen years of age, in whom there has existed for the last seven or eight years, one of the most extensive swellings of this viscus we ever recollect to have encountered; the functions of every other organ in the body seem to have remained undisturbed, growth has progressed as rapidly as customary, and were it not for the unusual protuberance of the abdomen, none would ever suppose that disease had made the slightest advance in any of its forms.

When we ask ourselves why so few sympathetic derangements accrue from disorders of the spleen, may we not find an answer to the question in the isolated situation which it occupies? It is every where surrounded by hollow viscera, it is true, but continuous with none, and confined loosely to its position by a fold of the peritoneum, its vessels and its nerves. Hence its relations of sympathy must be limited in their extent, although, as an organ enjoying the properties of vitality, it must necessarily be subjected in itself to disease; and its various disorders have generally been found to be those of a chronic, rather than an acute character.

It is more by the physical than by any other signs, for the reasons already given, that we are enabled to judge of the chronic enlargement of this organ. Situated deeply within the abdomen, and consequently not in contact with its anterior wall, it is not until the disease has made considerable advances, that the patient's attention is drawn to his situation. If in its commencement there were symptoms sufficient to rouse his notice, percussion would afford some data to guide us in the line of conduct we ought to pursue. With the left posterior wall of the abdominal cavity, immediately below the diaphragm, the spleen occupies so close a connection, that we find a dullness of sound on percussion, owing to the density of its structure; and the space over which this dullness is discovered, will correspond to the dimensions of the organ, which in the adult generally meas-

ures about four inches in length and three in breadth. In chronic inflammation and swelling, the sound on percussion will not only be duller than in a healthy condition, but in proportion as the viscus enlarges, so will also the extent of surface over which the dull sound is perceptible. But as was before observed, it is rarely, until the enlargement has made considerable progress, that we are called upon to notice it ; the tumor will then be found hard to the touch, the abdomen more or less distended, and percussion will afford the peculiar sound to which allusion has just been made.

The state of tumefaction however, does not always indicate inflammation of the spleen ; and should it exist without pain and febrile disturbance, we might reasonably ascribe it to a mere stasis of the blood, or the development of hydatids. Should the last be the true lesion, both percussion and palpation will throw some light upon the diagnosis ; the one affording a sound not so dull as in the engorged or inflammatory condition of the organ, and the other giving the sensation of tension and elasticity. Many of the morbid degenerations to which the viscus is liable, can probably be detected only after death ; we will therefore merely state that ulceration, osseous and calcareous concretions, tubercle and ramollissement, have been detected among the number of its lesions.

*Uterus.*—Inflammation of the womb has been detected at almost every period of life, and may be referred to the causes which commonly produce this result. It more frequently, however, follows as a consequence upon difficult labor, or some violence done to the organ by unskilful manipulation during the process of accouchement. Although at this juncture particularly, there are direct functional signs sufficient to form an almost correct diagnosis, yet are we enabled to render it positively certain from the physical condition of the viscus. If this condition be not observed, it is very possible indeed to commit some error ; for should

partial peritonitis supervene, similar direct and indirect functional derangements would undoubtedly follow; the lochia in either case would be arrested in its flow, the pain might occupy the same region, the tumefaction of the mammæ would subside, and an equal disturbance in the circulation might be observed. If we resort to percussion and palpation, we are relieved at once from all embarrassment; a round hard tumor, exquisitely sensible upon pressure, will be found occupying the hypogastrium, and when percussed giving a dull sound. When the inflammation is limited to the body and fundus of the uterus, these are the sole local signs with which we meet. This limitation very certainly often exists; but the entire organ is occasionally involved, and when it is so, an examination per vaginam reveals to the touch a greater or less distention of its neck; the os tincæ is closed, and the tumor is hard, and smooth, and painful.

Without going into an enumeration of the local signs which belong to *all* the different affections, by which the neck of the womb and ultimately its whole structure may be invaded, we will content ourselves with the simple expression of the opinion founded upon some experience, that without the aid of these, as furnished both by the touch and the *speculum*, our diagnosis would seldom or never be correct. In simple inflammatory engorgement of the neck, for instance, a curable disease, and in cancer of the same part an incurable one, except by the knife and not always then, do we not have particularly in their first stages the same functional symptoms? Unquestionably; and if these be the only guides we are enabled to call to our assistance, the relief of the individual could scarcely be expected.

It would carry us too far, as we have just hinted, to take up the various affections which belong to the organ and trace minutely the difference in their local, or show the similarity in their functional symptoms; but as the best treatise we have ever perused we would point the inquirer to the work

of Duparcque upon the "alterations organiques de la Matrice." It may not however be uninteresting, succinctly to relate the history of a case which we witnessed at La Pitié in one of the wards of M. Louis. In this female the disease had existed for many months, and commenced by the development of a tumor in the abdomen, which although somewhat painful and giving rise to other disagreeable sensations, yet did not incommode her to such a degree as to induce her to abandon her occupation. By and by symptoms referable to some lesion of the brain were observed, such as rigidity of the muscles of the arm, loss of sensibility, and diminution of the intellectual faculties; and in this situation she applied for admission into the hospital. The tumor appeared to be circumscribed to the touch, very *movable*, not very painful when handled, and larger than a child's head at birth. As many details as possible were obtained from the patient, and after a minute examination into all the symptoms belonging to the two affections, the opinion was given that the enlargement existed in the omentum, the true nature of which it was difficult, if not impossible, to establish. The pathological condition of the brain was pronounced to be that of ramollissement, and the autopsy verified the diagnosis. Upon opening the abdomen, what was our astonishment to find that the tumor was formed by the uterus in a state of excessive hypertrophy. Nothing had transpired in the derangement of its functions (she had passed the menstruating period of life) to lead to a supposition that it was diseased, or an examination per vaginam would have been instituted beyond a doubt, and the difficulty at once solved; for upon passing the finger into this canal, not only was the uterus discovered to be enlarged by the touch, but the whole mass could be elevated by pressing forcibly against it.

*Ovary.*—When the inflammation of this organ is of the acute character, and its tumefaction so slight as not to be observable to the touch, it is often impossible to arrive at a sure diagnosis; the functional symptoms for obvious reasons



cannot offer a clear elucidation, and the local signs may still leave us in doubt, inasmuch as they may be referred to another lesion. The existence of pain is discovered in the inferior lateral portion of the abdomen, which increases on pressure a peculiar feeling of tension and elasticity, the idea of which may be better expressed by the single term *renitence*, and a torpid sensation in the thigh corresponding to the affected side. But none of these are truly pathognomonic; the pain and renitence may belong to partial peritonitis, and the numbness may be created by a disease foreign to this organ. Its active stage of inflammation occasionally ends in suppuration, which may seek an outlet for itself into the cavity of the peritoneum; or by a more happy direction the consequence of adhesion, into the fallopian tube, vagina, or intestine. The more frequent termination is probably that of chronic engorgement. Here, the tumor speedily becomes perceptible, is hard to the touch and sometimes moveable, often adherent, and its situation corresponds of course to that of the ovary. We may say, en passant, that its adhesion to surrounding organs has been regarded as an obstacle to conception, and also the cause of abortion. (Madame Boivin.)

In *dropsy* of the ovary, it is easy to detect fluctuation; and should the sac have nearly filled the whole abdominal cavity, as it sometimes does, we must be guided in our diagnosis by inquiring at what point the distention commenced.

*Kidney.*—The diseases of this organ are not very numerous, and it is frequently impossible to arrive at a positive knowledge of their nature during life. We have no experience in their physical signs.

*Bladder.*—The symptoms in many diseases of the bladder are so peculiar in themselves, and the different modes of examination so well known and so generally practised, that much need not be said upon this subject. We will content ourselves by observing that it would be at least unwise to trust an opinion, when the functional signs of stone in this

viscus exist, without resorting to the sound; or pronounce that retention of urine, (it differs from suppression,) and consequent distention were present without feeling for the tumor in the hypogastric region. The causes of retention may be various, such as stricture in the urethra, paralysis, or inflammation of the organ, and the means of diagnosis which belong to each are too well understood to require enumeration here. The tumor formed in consequence of distention may also be felt through the rectum, and percussion gives a sound similar to that obtained from the liver.

Incontinence of urine is frequently the result of a gradual diminution of the capacity of the bladder, from long continued sub-acute inflammation and consequent thickening of its parietes. It is generally in old subjects that the disease is met with, and particularly when they have led an irregular course of life. When the dimensions of the organ are very much reduced, it is difficult even when distended to its utmost (which may be done by the injection of a fluid into its cavity) to recognize a tumor, unless the abdominal walls are thin and we are careful to relax them by position. In this situation, if the bit of gum-elastic which we use in making percussion be pressed forcibly upon the hypogastrium, we do obtain a dull sound, and the diminished extent which furnishes it will mark the degree of contraction which the bladder has undergone. When too it is not at all distended, and its coats have been subjected to a considerable degree of thickening, it has ceased to collapse as it were, and a tumor may be discovered beyond the prostate gland by passing the finger into the rectum, even although it may not contain a drop of urine. We are in possession of a case which fully establishes the foregoing remarks, and which dissection enabled us to verify.

*Stomach.*—Nothing is hazarded, we conceive, in the expression of the belief, that it is impossible to distinguish scirrhus of the pylorus except by one sign, and that a physical one, from chronic gastritis; and this allusion refers to

the existence of *tumor*, which is always present in the first affection. In both diseases heat and pain in the epigastrium exist, increased upon pressure, vomiting occurs, and the peculiar red appearance of the tongue, with its elongated papilla, is sometimes though not *always* remarked; so frequently is it wanting that it should cease to be regarded as necessary to gastritis, as some seem disposed to admit. Indeed if the whole train of functional symptoms direct and indirect be examined, we shall find a striking similarity; nor could less be expected, as in the disease of the pylorus there always supervenes chronic inflammation of a part or the whole of the mucous lining of the stomach.

It need not be remarked that upon no isolated symptom of either acute or chronic gastritis, ought we to found an opinion as to the existence of one or the other disease; pain seated in the border of the left lobe of the liver for example, might impose upon us the idea of a diseased stomach; heat in the epigastrium is sometimes as strongly marked in hepatitis as in gastric phlegmasia, and nausea, vomiting, and anorexia, may be symptomatic of both, or of other affections. We admit certainly, that when all the functional symptoms are present, we would be acting unwisely not to receive them as sure guides for our practice; and in the absence of any enlargement of the pylorus, we are of course to infer the existence of chronic phlegmasia of the organ. In acute gastritis particularly, we are enabled to add to the number of functional, the physical signs of slight tumefaction and renitence of the epigastrium.

Distention of the stomach to an enormous extent has been occasionally observed, and by M. Andral the cause has been referred to paralysis of its muscular tunio. In emaciated subjects especially, when a little fluid has been taken, not only its outline but its whole form, becomes distinctly discoverable through the abdominal parietes. We have had an opportunity of examining a case of the kind, in which the larger curvature of the organ extended considerably below

the umbilicus, and on either side into the iliac regions. That Andral is correct as to the fact of paralysis being the cause of distention, cannot be questioned, for he is too accurate an observer and too cautious in the expression of his opinions, to speak without sufficient evidence; but that it is to be referred universally to this cause can scarcely be true, nor do we know that he regards it as invariable. The case to which we have just alluded was one of scirrhus pylorus. Although emesis often occurred, as it must do, yet were the ingesta allowed to remain a sufficient length of time, frequently but little altered too by the unhealthy gastric juices, to produce *mechanically* a distention of the organ. If we are not able to adduce the act of vomiting as sufficient reason for the belief that no paralysis existed, (for the experiments of Magendie would lead one to suppose that the stomach is nearly if not altogether, passive,) we can at least say that nothing occurred during the progress of the case to warrant the suspicion. The muscular membrane was very much hypertrophied.

Tumors, of a character different from that of scirrhus, sometimes form upon either wall of the stomach; and although it may be beyond the power of art to relieve, yet may it be not uninteresting to know the exact position they occupy. When percussion is made over the epigastrium, and the organ is undistended by either solid or fluid ingesta, there is perceptible a resonance to which we have already adverted. Now should the tumor be situated upon its anterior parietes, however lightly the piece of gum-elastic may be pressed upon it, and however empty the stomach may happen to be, a dullness or flatness of sound will be the result of percussion. On the other hand, should the enlargement be situated upon the posterior wall, and we are careful to avoid *pressure* in making the percussion, we shall still obtain the natural resonance of the viscus, provided it contains neither fluid or solid; but if we use force sufficient to approximate the two parietes, the gum-elastic is thus brought to bear against the

tumor, and the dull or flat sound is immediately produced. An error of diagnosis might probably arise, if the tumor were situated behind the stomach and entirely unconnected with it except by contiguity; in such a case much assistance would be derived from the probable absence of its functional symptoms. We speak problematically, for we have met with no example, nor do we now recollect to have seen any one on record. In other lesions of the viscus, as ulceration and ramollissement for instance, we are acquainted with no symptom either functional or physical, which can lead to an unerring knowledge of the affection. Should the ulceration however proceed until perforation had resulted, the sudden accession of peritonitis, when considered in connection with anterior symptoms, would contribute to confirm the suspicion. Death must almost certainly follow.

*Intestines.*—The symptoms which accompany the inflammatory derangements of these viscera are generally so well marked, that we shall not detain ourselves with an enumeration of them all; nor indeed do the terms of the question render it obligatory upon us to do so;—a few observations relative to their physical signs is all that will be attempted.

Inflammation of their mucous membrane can scarcely exist without liquid or dysenteric dejections, although the local symptom of pain may be altogether absent, or felt only upon pressure. When discoverable by this means, its locality will of course point out the portion of diseased intestine; and in pure dysentery this is perhaps the only local sign we can adduce, except where it may terminate in gangrene, when meteorism or tympanites to a greater or less extent will supervene. Enteritis may of course exist alone, but it is not unfrequently complicated with the foregoing affection; the sub-mucous cellular tissue becomes first involved, and ultimately the two exterior tunics of the intestine. It has also been noticed to supervene upon ileus and peritonitis. To the functional symptoms in enteritis, we may annex the



physical signs of meteorism and renitence ; and to an experienced touch, the excitation of pain on pressure will tend still further to elucidate the true character of the disease. The slightest pressure for example in acute peritonitis, even the weight of a blanket, will augment the patient's distress, while it will require something more than the mere application of the hand in enteritis to increase his suffering ; the abdominal parietes must be brought more intimately in contact with the inflamed viscera, and *then* some little force exerted in order to arrive at the true amount of pain ;—and for an obvious reason must an increase of pressure be used to exalt the painful sensations in dysentery.

Stercoral accumulations occasionally occur, and produce very serious derangement of the functions, as constipation, frequency of pulse, tension of the abdomen, and pain sometimes sufficiently acute to warrant a belief in the existence of peritonitis ; these tumors have also been mistaken for a scirrhus of the epiploon. Percussion and palpation will here be found eminently useful ; the former will notify the existence of some foreign body, while the latter means may throw some light upon its nature. The mass is generally movable, unequal upon its surface, and smaller accumulations bearing the same characters, may also be detected along the presumed course of the colon.

Calculous concretions may also be developed in various portions of the intestine, and are sometimes on account of their location, beyond the resources of the art. When seated in the rectum they may be recognized by the touch, and if not very high up, by the sight, when we employ the speculum. These methods of exploration should never be omitted, for an error in the diagnosis might otherwise easily happen. In the very excellent work of M. Jobert, on "*Les Maladies chirurgicales du canal intestinal*," a case is reported which for a length of time was mistaken for a cancer of the rectum ; and as it affords an interesting example of the subject, we will give its translation entire. "The woman

who was the subject of this case, came to consult M. Richerand for a pretended cancerous affection of the rectum; at least such was the light in which it was viewed by the medical men whom the patient had consulted in her own province. It was impossible to misunderstand the statement of the patient, for a long written consultation of her advisers perfectly indicated all the symptoms which she experienced, and closed with this Latin phrase: '*carcynoma; nostra est sententia.*' The professor whom I have named, made the patient relate to him the history of her sensations. The recital of the woman caused him to doubt if the nature of her disease was truly cancerous; she said she experienced a feeling of weight about the arms, very often felt expulsive contractions which were not followed by the evacuation of fecal matters, and that the pain extended to the thighs, accompanied by a feeling of numbness which indicated a compression, and not a cancerous affection, which is denoted by lancinating and intermittent pains. She suffered from want of sleep, had a frequent disposition to vomit, and an utter disgust to all kinds of nourishment, so much so that she had become much emaciated, and her whole exterior presented a yellowish cast which may have been regarded as the effect of cancer, but which offered to M. Richerand no other indication than the absorption of the bile. The unhappy woman would probably have succumbed from inanition or inflammation of some one of the abdominal organs, if a skilful hand had not come to her relief. M. Richerand, after having given a serious attention to the recital of his patient, in order to be more certain introduced his finger into the anus, explored this cavity, and soon pronounced the existence of an intestinal calculus. He then substituted in place of the medicaments employed by her former physicians, an energetic surgical treatment. The patient being placed upon the border of a bed, and the thigh flexed upon the pelvis, he commenced the incision with a blunt-pointed bistomy, at the posterior part of the anus,

directing it towards the coccyx ; after which he was enabled to introduce a species of scoop smeared with oil, between the sides of the rectum and the calculus, which he then extracted ;—but he was unable to withdraw it except by piecemeal, for it had a considerable volume. He prescribed oily potions and enemas. The borders of the incision were brought into contact and soon cicatrized ; the appetite returned, the exterior of the body assumed its natural color, her sleep became quiet and refreshing, and she was soon completely cured. Thus, a certain diagnosis and a rational treatment, relieved the patient of an affection which had existed for six or seven months.”

It must have been remarked by all, that the symptoms attributed to worms in the intestinal canal, are occasionally so very obscure as to leave us in some doubt as to their existence until they have been expelled. Cases unquestionably occur where all the indications are prominent ; or it may happen that but one single symptom may be present, and that in its turn by no means conclusive, as it may belong to some other affection. During the winter of 1834–5, we visited a patient attacked with measles a day or two prior to the eruption ; the usual precursory symptoms were observed, by no means of an intense character, and as the disease was then epidemic among us, it was very easy to anticipate its speedy appearance. The eruption exhibited itself at the proper time, and every thing proposed after the usual mode until the evening of the second day, when it entirely disappeared. The *cough* which before had not been troublesome, became aggravated to such a degree as to render the enjoyment of sleep utterly impossible ; throughout the day it continued to distress the little sufferer, but not with such violence. The idea which first flashed across our mind was, that the catarrhal affection (which *always* takes place in measles) had been exceedingly increased by some unaccountable cause, or possibly that pneumonia itself had supervened. The application of the stethoscope however could

detect none other than the slight mucous râle which had previously existed, nor did it furnish one solitary sign of inflammation of the pulmonary parenchyma. We were entirely at a loss to account for the sudden and extreme violence of the cough, and as considerable fever existed, resort was had to venesection, and to the treatment which we thought the case demanded; but nothing appeared to offer even a partial relief, not even the exhibition of opiates. The symptoms remained as we have described them for three or four days, when a large lunbricus was found upon inspecting the child's evacuations. We immediately attributed to the irritation produced by worms the excitation of the cough, and also the repercussion of the eruption. The *spigelia marylandica* was ordered in suitable doses, some eighteen or twenty worms were passed, and the patient speedily recovered. A week or two after the occurrence of this case, we encountered another very similar in its history, with the exception that no worm had been observed to pass from the intestines; but with the other fresh in our recollection, we again had recourse to our favorite remedy, (the *spigelia*,) and it produced a termination of the case alike speedy and happy.

The question now arises, how far we should be guided in our opinion of the presence of worms, where cough may be noticed as the most prominent if not the sole symptom, and the stethoscope afford no evidence of a pulmonary lesion sufficient for its production. We must confess our disposition to regard it as an important means of diagnosis, for we are acquainted with no other intestinal complication which could produce similar results. Two cases not very dissimilar to our own, may be found related by Dr. Stokes in the May number of the *American Journal of the Medical Sciences* for the year 1835, and we are happy in being able to bring forward so distinguished an authority in corroboration of our opinions.

*Typhoid or Typhus Fever.*—The pathology of fever has been for a long time a fruitful subject of discussion with the

profession. They who style themselves solidists, regard the lesion of some one organ or other as necessary and antecedent to the occurrence of febrile symptoms. The humorist looks to some inexplicable morbid alteration of the fluids as requisite to the same result, and the advocate of the essential or idiopathic doctrine may perhaps draw his conclusions within the recesses of his closet, uninfluenced by the aid of autoptical research. It is not intended to enter upon a lengthened defence of one or the other of these theories, for we have already denied the practice of establishing any medical opinion upon hypothetical reasoning; and we have not enjoyed the opportunity for so general a dissection as to be in possession of a mass of facts taken from the various forms of febrile affections which it would be necessary to discuss; and the task of collating from the numerous authorities upon the subject, would be a work of supererogation. We may be allowed however to say, that in those cases of fever hitherto called essential, the researches of M. M. Ribes and Bouillaud have done much to demonstrate as *symptomatic* of abdominal phlebitis; and the unrivalled work of M. Louis, entitled "*Recherches Anatomiques, Pathologiques et Therapeutiques sur la maladie connue sous les noms de Gastro-enterite, Fièvre putride, adynamique, ataxique, typhoide, &c.*," has incontestably proved the true lesion of typhus to reside in an organic alteration of the glands of Peyer.

In making this remark, we are to be understood to refer to this disease as existing originally and primarily as typhus. It is common enough to hear the remark made, that bilious fever, or pneumonia, or dysentery, or indeed almost any other disease, has assumed a "typhoid type" towards its close; and if we are to regard the word *typhoid* as expressive of a low or *debilitated* state of action, the assertion may be esteemed a correct one. But still it is neither pure typhoid or typhus fever, and perhaps the position may be tenable that no disease can run into another and totally different affection, the symptoms of the first altogether disappearing, and those



of the second becoming so prominent as entirely to mask them. It is well known, to be sure, that in very many cases of protracted disease particularly, symptoms indicative of secondary lesions do occur, and the point will be yielded that to *them* the loss of life may sometimes be attributed; yet there is still a sufficient indication of the continued existence of the primary disease. When ataxic symptoms do take place in other than the pure typhoid affections, the *union* of those which are noted by Louis as pathognomonic of the disease he has so well described does not occur, and we must look to some other source to account for their appearance.

That the typhus fever referred to exists in our own country is not at all doubtful, for we have seen it, and we well recollect to have heard M. Louis observe that the late and lamented Dr. Jackson, Jr. of Boston, had informed him, in a letter written some little time after his return, that he had recognized the same disease he had so often seen at La Pitié. Why is it then that it is not more generally known among us? Perhaps, because we have not yet known *how* to observe, or because too many of us are satisfied with a superficial examination of the cases we are called to treat. That it has been mistaken for *bilious* fever we feel well satisfied, and when a few days before death lays his iron grasp upon the patient, the extended ulceration ruptures some intestinal vessel, and hæmorrhage is the consequence, it is *conjectured* that it proceeds from the liver, for that it is said must be the diseased organ in all bilious fevers. We have thought proper to introduce the history of this disease among the number we shall discuss, because, for the reasons assigned, we believe it to be not a very uncommon one in our country, and because its chief *diagnostic* signs are physical and external. As it may not have been generally noticed by the profession, we shall be excused for giving a somewhat minute description of *all* its symptoms, and we cannot offer from any other source so good an one as that of M. Louis himself. The remarkable accuracy of this physician induced him to

compare the symptoms exhibited in those cases that died, with those which were cured, and they were found to be the same, except that in the recovered cases they were generally less intense, *throughout* the continuance of the disease. His description will sufficiently repay the trouble of its perusal.

“The disease commenced at different periods of the day, before breakfast, after or during the time of a meal, ordinarily with a certain violence, by chills accompanied with trembling, cephalalgia, universal lassitude, thirst, anorexia, pains in the abdomen; and in the majority of the cases (his description is founded upon the observation of 138 cases, 50 of which died) liquid stools were added to these symptoms during the first twenty-four hours. Heat succeeded to the chills; these recurred for several successive days in almost all the subjects, generally in the evening, or when the patients retired to bed. After this the heat became permanent, more or less intense, and almost always dry.

“These symptoms which had in them nothing characteristic, and only indicated that the disease had its seat in the abdomen, acquired successively more intensity. A little sooner or later, at varying epochs from the commencement, other symptoms were noticed which gave to the affection its peculiar physiognomy. These symptoms were relative to the cerebral functions, to the organs of the senses, to those of the abdomen, and presented themselves in the following manner—

“The patients experienced a debility by no means proportioned to the other symptoms, and to the apparent gravity of the affections;—dimness of sight when they walked, stood erect, or sat up in bed. They had somnolence, at first in a feeble degree, but soon so intense that they relapsed into a sleepy state the moment we had ceased to interrogate them. Their memory was slow, although generally sure; they were averse to the exercise of their intellectual faculties; indifferent to every thing passing around them; almost

always so to their own situation; and many who had involuntary discharges did not even desire to be cleansed. Although continually drowsy they complained of not having slept, the sleep being disturbed by dreams which they in vain attempted to resist. Delirium was added to the somnolence in many instances, rarely preceded it, but occurred at intervals of two, three, five or six days and even a longer time after it; sometimes slight, taking place only during the night; sometimes better marked and almost continuous; sometimes agitated, furious, so much so that it was necessary to make use of the strait-jacket;—and like the somnolence this symptom persisted until the fatal term, except in some individuals in whom the disease lasted for a considerable length of time.

“Buzzing of the ears took place in a large number of individuals, sometimes united to a certain degree of deafness. This generally occurred a little later in the disease, augmented by degrees, and became so intense in some that it was impossible to make them hear. The eyes were injected, burned more or less, sometimes of a uniform rose color, but rarely so at the commencement; some patients saw surrounding objects as through a thick cloud, or confusedly, even when in bed. A slight strabismus occurred in one case; many bled from the nose, but experienced no relief; a large majority presented upon the surface of the body an eruption of lenticular, rose colored *spots*, generally about the tenth day, rarely on the seventh, and never before; and this eruption did not vary less in relation to its duration than its abundance; sudamina (little vesicles), very frequently occurred.

“At the same time that these three orders of symptoms, all more or less characteristic, developed themselves, the diarrhœa generally made progress; the stools became involuntary when the delirium was considerable, and in some individuals, the fecal matters were mixed with a considerable quantity of blood. The tongue, which hitherto presented

nothing remarkable in a large number of cases, now became generally dry and sticky (*collaute*); sometimes brown or red;—in some cases, furred—in others, furrowed or chafed (*feudillée*), black, and more or less thick in others. Many thrust it from the mouth with difficulty, tremblingly; permitting it to remain between the teeth, and forgetting to withdraw it. Deglutition was sometimes difficult, the posterior part of the mouth being more or less inflamed; some had pains of the stomach and nausea; a few vomited, which ordinarily happened towards the close of the disease. The debility became each day more marked, the patients trembled as they stood, and walked as if they were drunk; it soon became difficult for them to satisfy their necessities;—soon they became incapable for the most part, and remained the whole or the greater part of the day in the same position, generally upon the back, permitting themselves to be moved as if they were inert bodies. Then the integuments which covered the sacrum became red, excoriated, and were more or less promptly seized with gangrene; the blistered surfaces were covered with pus of a bad quality, presented a livid aspect; in some cases, ulcerations, or even a complete destruction of the skin to a greater or less extent. The heat was dry and generally exalted; chills rarely occurred at this stage of the disease, and when they did, they marked the debut of some secondary lesion, as for example, erysipelas. The pulse was much accelerated, beat an hundred times or more per minute, and rarely less; lost the volume which in a large number of patients it had at the commencement, and became small, weak, contracted and irregular; yet in some subjects it preserved a certain volume until death occurred. The cough which existed in the majority of those attacked was not often inconvenient, and was almost always accompanied with a universal sonorous râle, to which, in some individuals, the crepitant râle was added during the last days of the affection; the only sign of inflammation of the pulmonary parenchyma, generally not very extensive.

“The successive changes which took place in the physiognomy were remarkable. Puffed and livid in the commencement, in a large number of patients, the face lost by little and little this character, and became as it were, without expression, and sunken ; stupor or indifference, and in some instances a profound preoccupation was observed ; sometimes they became furious or wandering, according to the peculiarity of the delirium. In some cases, also, the expression of pain was manifested by the countenance ; in others, spasmodic twitchings of the muscles of the lips, the zygomatics or those of the inferior jaw were observed, or a permanent contraction of the eyelids. These spasms were sometimes of considerable duration, and were also noted in other regions of the body ; occasionally starting of the tendons, and well-marked spasmodic movements of the superior members were observed, and sometimes a permanent contraction of the same parts and of the muscles of the neck.

“Finally, death supervened either in the midst of delirium, or during a sort of calm, the patients having lost all consciousness some hours before ; sometimes it occurred in an unexpected manner. Occasionally it was owing to the perforation of the small intestine, which almost constantly gave rise to symptoms of intense peritonitis.”

Such is the account given of the history of typhus fever, as observed by the author from whom we have quoted, and the attentive physician will at once recognize in the long catenation of symptoms, many which belong to all the febrile affections ; and this may account, in addition to an examination not sufficiently rigid, why the disease has so long remained unknown among us. It is not of course to be expected that each individual symptom enumerated is to be met with in every case, and this remark is applicable to all diseases ; they are found to vary, too, in different individuals in their intensity ; but whenever the affection is typhus, there is always a union of a sufficient number to characterize very



distinctly the nature of the disease. The symptoms which are regarded as *diagnostic* of this affection have been seen in other diseases, but so rarely as not to warrant the idea that they are phenomena properly belonging to them; while on the other hand they occur in so very large a proportion of typhus cases, that we are constrained to yield them an important office in the elucidation of their history. Besides, whenever they have been remarked in other diseases, it has been singly or nearly so, and we do not recollect an instance as given by Louis, where a union of a majority of the diagnostic signs existed, and the peculiar lesion to which he refers was not found after death.

Contenting ourselves with referring the reader again to the description we have borrowed, we will merely mention the symptoms that are to be esteemed pathognomonic, and then submit a few remarks in relation to some of them. The signs to be regarded as particularly applicable to this affection, are the following:—epistaxis, lenticular rose-colored spots upon the surface, succeeded by sudamina, meteorism, coma, great debility in the *earliest* stages of the disease, destruction of the surface upon which blisters have been placed, spasmodic movements or contraction of muscles, and buzzing of the ears. When these are united in any particular case, we have every reason to pronounce the lesion to be in the little glands of Peyer; and indeed in the absence of several of these, if we are still enabled to discover the lenticular spots, the sudamina and meteorism (physical signs), we should scarcely utter a false diagnosis in adhering to the same opinion.

Inasmuch as secondary lesions frequently occur in this disease, (the result probably of protracted excitation in the organism,) the question has been asked by Abercrombie we think, Why may not the alterations of the glands of Peyer be the effect rather than the cause of typhus fever? That it is not the effect, we possess presumptive evidence at least in the fact, that in a very large proportion of cases, *diarrhœa*

unattended with febrile excitement exists for a longer or shorter space of time as the only symptom, and consequently before any sympathetic disturbance is observed. To produce so serious a lesion as inflammation and ulceration of any organ, we might reasonably expect that the febrile agitation should be both violent and long continued; yet without this, we notice as has been said the occurrence of diarrhœa, and dissection discovers in no exception (in Louis' 50 autopsies) the alteration in Peyer's glands to be constant and invariable; and in the many which have fallen under our inspection the same result was observed.

*Diarrhœa.*—As diarrhœa shows itself to be the primary symptom in a very large number of instances, we have just reason to regard the increased peristaltic action of the intestines as consequent upon the alteration of Peyer's glands. But this increase of the evacuations not being uniform and constant, and the peculiar type of fever existing beyond all reasonable doubt, would lead us to inquire into this apparent contradiction to the theory. The explanation is to be found in the *form* of alteration in the diseased glands; when diarrhœa is absent they have been observed to be simply swelled, of a pale or slight rose color, and the mucous membrane covering them entirely healthy. When however they have proceeded to other forms of alteration, involving largely the lining membrane which intervenes and covers them, the occurrence of diarrhœa is inevitable. We shall notice in a cursory manner the most common modes of alteration before we close with the subject.

*Spots.*—The frequency with which the red lenticular spots make their appearance, authorizes the opinion that they are of the number of those symptoms which properly belong to this disease. They are observed generally upon the chest and abdomen, and occasionally also upon the extremities and posterior portions of the trunk. From the sixth to the ninth day of the disease they begin to show themselves, and appear for four or five days successively;

after this time they gradually disappear by growing paler and paler day after day.

*Sudamina*.—These vesicles are observed in rather more than two thirds of the cases of typhus fever, and are as frequent in the intense as in the milder forms of the disease. They are rarely seen before the twelfth or fourteenth day, and may be consequently regarded as succeeding to the lenticular eruption; their duration continues from three to ten days, and they are more numerous about the neck, the neighborhood of the armpits and the groins than on other portions of the body;—the form and dimensions vary, being generally round when small, or oblong and sometimes flattened when of larger size.

*Meteorism*.—The tympanitic condition of the colon expressed by this term is exceedingly frequent, appearing in more than three fourths of the patients. The period of its debut varies; for the most part it continues throughout the whole course of the disease in those who die, gradually augmenting although sometimes decreasing after it has reached a certain point. The amount of distention is occasionally enormous, so much so as to conceal the stomach and press upon other viscera of the abdomen, thereby interfering with their actions as well as the function of respiration, and thus causing much distress to the patient. The seat of meteorism is almost uniformly observed to be the large intestine, and its cause is still enveloped in the greatest obscurity. In a few instances the mucous membrane of the colon has been found slightly inflamed, softened or ulcerated, but in a very large number on the other hand not the least disease can be detected; and if it were the result of any of the lesions of the internal coat, observation would constantly have recognized it in the small intestine, for that is without an exception the seat of disease. Hypertrophy of the muscular coat of the colon is universal in a greater or less degree, in consequence of the reaction of the tunics upon the gaz which they contain. In distention of all the hollow organs the

same pathological fact is observable. Percussion of course furnishes the means of detecting the extent to which the distention is carried.

The glands of Peyer are found more or less altered in every case of typhus fever, the gravest alterations being those which exist nearest the cœcum; as we advance towards the upper portions of the intestine the morbid appearances are evidently less. These alterations seem then to take place in a progressive manner from the cœcum towards the duodenum, and they often exhibit different degrees of intensity in the same subject. When death happens in a few days after the commencement of the disease, the affected glands are observed to be much more numerous than when it occurs at a later period; and the destructive process of ulceration is very generally more extensive in the neighborhood of the cœcum than in other parts of the intestine. When it is not so, the case is one which has lasted a considerable time, and cicatrices are occasionally noticed showing that the primary ulcerations had healed. The disease is still prolonged however, in consequence of other glands in their turn becoming affected, and secondary lesion of some important organ or organs supervening, adds an additional impediment to the happy termination of the case.

The first form of altered structure is simple swelling of the gland; as it progresses the superincumbent mucous membrane inflames and often becomes softened, and the sub-mucous cellular tissue being also implicated is found to be more or less thickened, thus offering a double cause for the projection of the gland interiorly. As the disease proceeds, the whole mass (including the gland, sub-mucous cellular and the mucous tunic) becomes larger and softer, and the ulcerations commence. Soon these tunics are destroyed to a greater or less degree, and the muscular coat participating in the morbid alteration is inflamed, softened and ulcerated; the peritoneal now yields in its turn, and perforation, the last and

fatal link in the destructive chain of disorganization, hurries the patient to his grave, the victim of the most atrocious agony. The occurrence of perforation of the intestine varies in different individuals; rarely happening before the twelfth day, it is often protracted to a very late period. The pain is sudden, *tearing* and intense, followed by decomposition of the features, nausea and vomiting, chills, and all the symptoms of acute peritonitis.

*Peritonæum*.—In acute inflammation of this membrane, the symptoms are generally sufficiently intense and well marked to furnish a clear diagnosis. The pulse however, is not uniformly small and hard, nor the fever great, as we would be led to believe by almost all who have written upon the subject. To the general, may be added the local and physical signs, which consist of pain upon pressure, often extreme, tension and renitence of the abdominal walls, and in many instances meteorism is developed to a great extent. In the more chronic forms of the disease especially, the pain is slight or may not even exist at all, and the same remark may be made in relation to the febrile excitement; but the *form* of the abdominal parietes is sometimes observed to differ from its normal condition, in consequence of the peculiar dispositions which the false membranes may assume. Many of the intestinal convolutions being glued together by false membranes, present to the touch the sensation of a *single* mass; and we have on some occasions heard that peculiar sound termed by the French the *bruit de frottement*, caused by the friction of the intestinal surfaces alone, or of the parietal peritonæum with these last, when both may have been covered by the extraneous false tissue.

Dropsical effusion is perhaps the most frequent termination of general peritonitis; sometimes it is purulent, or flocculent masses are observed floating in a thinner liquid. Whatever the effusion may be, the methods of detecting it are too well known to need enumeration here.

Partial peritonitis is by no means an uncommon form of



this affection, and as its result tumors arise, which when superficial, are easily appreciated both by the sight and touch. These tumors vary considerably in their form, volume, situation and relations with surrounding parts, and in giving them their just value we are often at fault when aided by both the local and general signs; the latter indeed are frequently so very obscure as to furnish little or no assistance. Neighboring organs may become irritated, compressed, or even displaced by these peritoneal tumefactions, from whence arises a disturbance in their functions; and being thus thrown from their proper situations, the idea of their own organic derangement may be imposed upon the most observing. In this way jaundice may be produced from sympathetic irritation of the liver, and an enlargement of the left portion of the epiploon may be mistaken for disease of the spleen. In the pelvis, the functions of the bladder and rectum become deranged, and purulent collections circumscribed by false membranes are observed. These are frequently discovered by the touch and percussion, although it may now and then be difficult, if not impossible, to establish the exact lesion. When existing for a long time, the function of nutrition is impeded; gradual wasting of all the tissues is superinduced; the pus being absorbed by the veins, and then eliminated from the mass of blood, forms collections in other and distant organs; or secondary lesions of the lungs or intestines taking place, diminish the prospects of recovery.

There is a most singular and deceptive appearance of peritonitis of which I do not recollect ever to have seen a description, and which might be termed the nervous or neuralgic. It is possible that Mr. Teale, in his work upon spinal irritation, may have alluded to it; but not having the book in our possession, we cannot now make the reference. We have seen but one case, and regret that minute notes were not taken at the time; the main points however, are sufficiently distinct in our memory. The pain, symptomatic of the lesion, is of course seated in the muscles. A gentle-

man from Connecticut, was attacked early in May last, with dysenteric symptoms, and was seen by us a few days afterwards, in consultation with the attending physician. The symptoms of dysentery were unquestionable, mucous and bloody stools often taking place; these however, soon yielded to appropriate treatment, and the abdomen, which before the subsidence of the intestinal disease, was very tender upon pressure, became so much so as scarcely to allow the weight of a light blanket. The idea occurred to us, from the exquisite pain induced by the mere contact of the hand, that we had now a case of peritonitis to deal with, and leeches and cataplasms were applied without any melioration to the pain. This fact, in connection with the absence of the most prominent symptoms of the disease, caused us now to hesitate; for example, the pulse was undisturbed, the countenance was calm except when any thing was brought in contact with the abdomen, which preserved in every respect its healthy appearance, nor was either renitence or meteorism detected. For several days we were kept completely at fault, and of course our patient suffered. Many anomalous diseases depending upon spinal irritation, had been met with in our practice; and it was at length suggested, that this might probably be of the same character. An examination was accordingly made, and several of the dorsal vertebræ were found sensible to the touch; the tartar emetic ointment was applied, and the patient's sufferings were soon at an end.

### *Thoracic Diseases.*

As was observed in the early part of this essay, it is in the various affections of the thoracic cavity, that the external means of exploration are more decidedly and beneficially applicable. By the appreciation of physical signs, we are enabled, it is true, to demonstrate a lesion of the abdominal

organs, where without them we might be ignorant even of the particular viscus affected; but by the aid of all the symptoms, it is occasionally impossible to state the true and exact disease which may exist. It is not so, however, in relation to diseases of the chest; and in addition to percussion, the still more available mean of auscultation assists us to form a correct diagnosis. From the very nature of the physical agencies, it must result, that in these affections the diagnosis must, with very few exceptions indeed, be clear and precise. Depending upon a certain condition of the pulmonary apparatus, the respiration must inevitably, when that apparatus is in a normal state, exhibit itself to the ear in an invariable and constant manner, although modified in its degree of intensity, by circumstances connected with the individual. Yet the general character of healthy respiration is such, that it can never be mistaken when once heard, and to be properly appreciated it must be heard; we shall therefore attempt no description by words.

Whenever the condition of the apparatus becomes deranged however, it follows as a necessary consequence, that there must be a corresponding departure from the healthy function of respiration; and these varied and numerous differences all serve as the true exponents of the peculiar malady which supervenes; and the reason why the diagnosis is so much more certain here than in any other class of diseases, is that a peculiarity of respiration and of resonance of the voice, belongs only, in almost all cases, to each individual lesion.

We shall not impose upon ourselves the task of giving a detailed and formal exposé of the various terms used in explanation of abnormal respiration or any other physical sign, because the Committee are no doubt themselves masters of the subject; it will however become necessary, in order to trace the true and legitimate value of these signs, to give an explanation of the manner in which they are produced; and such instances will of course frequently occur. Nor will

*See also 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.*

the attempt be made to embrace within the limits of a short essay, the whole class of diseases appertaining to the thoracic organs.

*Pleura.*—Although the general and rational signs of pleurisy may lead us in a great many instances to recognize the true character of the lesion, yet are there cases of pneunonic inflammation, particularly in their inception, in which without the aid of physical signs, we may mistake the one for the other. We have encountered cases of pneumonia, where for the first few hours there was little or no expectoration; or if any, not of that peculiar kind which belongs to this disease, and in which the pain also, was as sharp and as acute as that of pleurisy. The face, too, has been seen to be without that flush of vivid redness, which has been given as one of the characteristics of pulmonary inflammation; and it must be admitted by all who have had much experience in the two diseases, that it would be impossible to look for a pathognomonic sign in the condition of the pulse. Varying as this must do by so many circumstances connected with the individual, founded upon idiosyncrasy and the different susceptibilities in the chain of sympathies, it would be vain to draw a comparison so well founded as to serve as a sure and invariable guide. Nor is this all; pleurisy occurs as a secondary lesion in some diseases, and may really become the efficient cause of death; and that too, under circumstances where its rational symptoms would rarely, if ever, point out its existence; besides, it is only by the physical signs that we can distinctly trace the various changes which supervene during its progress, and mark unerringly the amount of effusion and its gradual diminution. And it is within the experience of those who have had the amplest opportunities for observation, that all the local symptoms, as pain, dyspnœa, &c. may fail, while yet the physical signs may exist in their fullest extent. Latent pneumonia, too, giving rise as it does to but feeble functional indications, yet sufficiently so to authorize a belief in

some thoracic lesion, will almost always leave the uninitiated in physical signs in doubt and uncertainty.

As we have done in relation to all the diseases hitherto investigated, so shall we still refrain from entering upon a full history of the general and functional symptoms of those yet to be discussed. Indeed, they will only be mentioned when it becomes necessary to state their insufficiency towards the formation of a clear diagnosis, comparatively with the physical signs; and as the remarks which have just been made relative to inflammation of the pleura and the pulmonary parenchyma, may induce at least some little doubt as to the value of the functional signs in *all* cases, we will proceed to enumerate those, which from their nature cannot leave us in error.

Were the physician called to a case of pleurisy during the first moments of its invasion, he might probably be at a loss in his diagnosis, except he were to reason upon the principle of exclusion; the signs of all other affections of the lungs or pleura being absent, he might reasonably infer the existence of this. But he would not long remain in doubt; for it is often surprising with what rapidity effusion takes place into the cavity of the pleura, while the inflammatory orgasm in its highest degree may yet remain unsubdued. Laennec tells us that he has occasionally discovered effusion within one hour after the commencement of the disease, oftentimes within the space of three or four hours, and that it is never doubtful after the second day.

As soon as the effusion does take place, there can be no further room for doubt. The lung crowded towards the spinal column by the pressure of the fluid, permits the respiration to be heard only along a portion of its course, and that to the extent of some two or three fingers' breadth; above the spine of the scapula, unless the effusion be very great, and beneath the clavicle, it may also be discovered. This absence of respiration is owing of course to the temporary obliteration of the air-cells and minute bronchial



ramifications, in consequence of the pressure exerted upon them ; and it is only because these last are sufficiently firm and large at their root or origin to offer the necessary resistance, that the respiration there remains audible. The lung of the diseased side being thus deprived of its power of receiving air, the opposite lung, in order to make amends as it were for the deficiency of its fellow, appears to undergo an increase of action, and the respiration assumes the character denominated *puerile*. This when very loud and well marked, as it sometimes is, may lead the inexperienced into error ; for it may be heard when the instrument or ear is applied to the diseased side, the effusion not being excessive, and thus impose the belief that the lung is here still permeable to the air. The diagnosis might then be called in question ; and unless the difference between puerile and bronchial respiration was very clearly understood and appreciated, it might even be imagined that inflammation of the pulmonary parenchyma existed ; the dullness of sound upon percussion would also aid such a supposition, and if ægophony be at the same time mistaken for bronchophony, as is not unfrequently the case, persistence in the error would be still more certain. But he who has once heard the full, hard, and noisy sound of bronchial respiration in pneumonia, and that too passing immediately *beneath* his ear, can hardly mistake it for the loud though soft vesicular murmur of infancy ; an attentive examination in the case before us, will give the sensation too of the sound coming from a distance, which as has just been intimated, is not the case when the pulmonary tissue is inflamed. It is not pretended that this state of things is of frequent occurrence ; on the contrary it is very rare ; the respiration being in a large majority of instances, nearly if not quite inaudible on the affected side, except at the root of the lung.

When the condition of the thoracic cavity is unaffected by disease, the application of the hand upon its sides, during the process of respiration, and more particularly the act of

speaking, imparts to it a peculiar trembling sensation ; and if we use percussion over any of its regions, a well marked resonance, greater in some situations than in others, for obvious reasons, is uniformly elicited. The mechanism of both phenomena is easy of explanation ; the permeable parenchyma, dilating and distending itself under the influence of the introduction of the air, comes closely into contact with the sides of the chest, and the voice reverberating throughout the narrowest recesses of the pulmonary apparatus, thus causes the motatory and trembling feeling which is appreciated by the touch ;—and the same anatomical character of the lungs to which allusion has just been made, viz. their permeability, although not rendering them hollow organs in the strict acceptation of the term, even when conjoined with the fact that numerous canals pass in every direction, yet makes them enough so to produce a clear resonance on percussion. When effusion has resulted, a denser medium being thus substituted for the air, which no longer finds admission into its appropriate cells in consequence of compression of the lung, the thorax loses the resonance which belongs to it in its natural state, and becomes dull when percussed.

Another physical sign, which is only observed while effusion is present, is *ægophony* ; nor is it then heard, unless the effused fluid be moderate in quantity. From this fact we are therefore always enabled to tell, if no other symptom existed, whether the effusion be excessive or not ; if it be so, this sign, as we have remarked, will not be heard, and should it afterwards be recognized, an affirmative and positive indication of its diminution is established. In order to appreciate the reasons upon which these remarks are founded, it will be necessary to enter into an explanation of the production of *ægophony*. This sign bears some resemblance to *bronchophony*, and it does so, because a similar condition of the lung in part, is required to produce both. This condition is its greater density. When it has become

more dense than natural, its pathological condition it is true is not the same, although its effect upon the development of the two signs alluded to, may be alike. In the one case, (that of bronchophony) the parenchyma is engorged, overloaded and impacted with blood, and the molecular or ultimate order of the tissue, is obviously deranged. In the other, the density is merely the result of compression, and no other change takes place in the organic structure, than a closer approximation of its parts. This dense or compact state of the lung being established, and the result of either the one or the other cause, prevents that diffused resonance of the voice which is noted in its healthy condition, as to the part affected we mean; and as all more solid bodies are better conductors of sound than those less so, the voice is heard within the chest with a distinctness proportioned to the solidity. Were there no effusion, the increased density of the lung, or a portion of it, as the case might be, from whatever cause it might arise, would produce pure bronchophony; but while it exists, if moderate, the resonance of the voice is so modified by the medium through which it is heard, (the effused fluid,) that a certain trembling sensation, a sort of saccade, is distinguished, which imparts to the sign of ægophony its characteristic peculiarity. And from this explanation we at once see why it requires but a moderate quantity of fluid to allow of its detection; if it be excessive, the medium through which the resonance would have to pass, opposes an insurmountable barrier to its appreciation.

Ægophony is one of the physical signs to which we may look with very great certainty in almost all cases of pleurisy, and from what has been said it may be inferred that the stage of the disease in which it is most generally heard, is that wherein absorption of the fluid has taken place to a considerable extent. But it occasionally happens, though rarely, that it is heard throughout its whole continuance; and this is owing, as dissection has proved, to the lung being held near the sides of the chest, by adhesions which

had formed in consequence of some former attack. During the early part of the disease, ægophony is sometimes met with, before the effusion has made sufficient progress to impede its occurrence.

Another sign, the consequence of effusion, is dilatation of the affected side, and this is frequently observable a few hours after the fluid is secreted ; because there are cases in which it at once becomes very considerable. The ribs appear to be elevated, the intercostal spaces are augmented in breadth, and in proportion to the excess of the fluid after it has reached a certain point, is the diaphragm depressed ; and hence it is that very often a deceptive appearance of enlargement of either the spleen or liver is observed, and more particularly the latter, on account of its superior volume. It is undoubtedly the chronic form of the disease, in which dilatation is more uniformly perceptible, and the phenomena to which we have alluded are more distinctly marked. Although always commencing early, it may not be clearly distinguishable for some little time, yet it ultimately increases to such a degree as no longer to be mistaken. All the physical signs hitherto mentioned, except ægophony, are eminently developed, and this for the reason already given. The lung, in consequence of protracted compression, appears to be nearly destroyed ; its tissue is pale and exsanguineous, and its vessels and bronchial tubes are flattened. The character of the effusion is also found to vary ; it is often purulent and is of a green or yellowish color. In this state the disease is denominated empyema.

Should life continue sufficiently long, and the absorption of the fluid take place, the affected side becomes contracted in its dimensions. This is the result of the slow and gradual manner in which adhesions are developed ; and did it belong to us in this place to enter minutely into the mode of their formation, we might offer an interesting history of the process. It is sufficient for us to say here, that they ultimately assume a fibro-cartilaginous structure, and thus tend

to bind down and constrict the sides of the chest. In the meantime, the lung itself remains compressed and flaccid. The signs of this complication are either a total absence of respiration, or it is but slightly heard and that near the root of the lung or in its superior portion. The thickness of the accidental developments does not cause this indistinctness or absence of the respiratory murmur, as the case may be, and which might readily be inferred from a hasty examination. Dissection reveals the true cause, by exhibiting the lung in a compressed condition, and thus inhibiting the ingress of the air into its cells; and the same pathological feature will abundantly account for the dullness of sound on percussion, which presents itself as another sign.

Before effusion takes place, or even while it is yet progressing, and we refer now to the more acute form of pleurisy, a thick, tenacious and plastic exudation lines that portion of the pleura which is in a state of inflammation. This is the first form of false membrane, or accidental tissue as it is called, and it is a curious circumstance in the history of this affection, that the hitherto unaffected portion of the pleura opposite to the diseased part speedily itself becomes inflamed; false membrane is here also produced, and we refer to this condition more particularly for the purpose of explaining another physical sign which is not very uncommon. In a state of health, the serous surfaces of the pleura, bedewed with a thin and slightly viscous fluid, glide easily and imperceptibly over each other. But so soon as this false membrane is exuded, the situation of things becomes altered, and in proportion to the degree of consistency which it assumes, by so much is the free and easy movement of the opposite surfaces, the one upon the other, impeded. Rough surfaces are opposed where before they were perfectly smooth, and if the ear or the instrument be applied, the sound elicited by their friction is easily distinguished. This has been termed the ascending and descending friction sound, —the former being produced during inspiration, and the



latter during expiration. We need scarcely remark that this sign is only appreciable either before the existence of the secreted serosity, or after it has been absorbed.

There is such a disease as partial or circumscribed pleurisy, and its *modus formationis* will very succinctly be detailed. It is not of very frequent occurrence, because experience has proved the fact that in a pleura already adherent, inflammation supervenes more rarely than where this is not the case. Partial pleurisies are those circumscribed by former adhesions, and rarely if ever exist under other circumstances, except in two cases which will be mentioned under the heads of pleuro-pneumonia and phthisis. They are generally found in the fissures located between the lobes; between the base of the lung and diaphragm,—upon that part of the pleura covering the posterior and inferior portions of the lung, and between it and the mediastinum. The physical signs are absence of respiration in the part affected, occasionally ægophony is manifested, and where the situation of the diseased part will admit of percussion, a flat or dull sound results.

*Pleuro-Pneumonia.*—This is not a very frequent affection, if the term be adopted in its fullest acceptation;—where the totality of the lung namely and of the pleura also becomes inflamed. And where the disease exists even under this form, both reason and experience teach us, very contrary indeed to what might be imagined at the first blush, that the patient runs less risk of his life than where the one or the other occurred alone. We shall not now relate all the physical signs of pneumonia and the pathological condition upon which they depend, as this will be done in its appropriate place; enough however will be said, in order to afford a comprehensive view of the present disease, and it need scarcely be remarked that the most complete combination of general and functional symptoms could avail nothing towards establishing the true character of the lesion.

The reason why the complication of the two is less dan-

gerous than either the one or the other singly, is derived from the fact that the pneumonia (is not the preposition *peri*, which is often prefixed to the word pneumonia, worse than useless, as it may cause confusion, where there is no difference?) is lessened in degree, in consequence of compression of the lung by the effused fluid. Thus pressed upon, its vessels are not subjected to the extensive engorgement which would otherwise happen, and inflammation of the tissue is very much moderated. But it is not of course prevented, and this operates in its turn upon the inflamed pleura. The lung swelled and engorged, although to a moderate extent, as has been said, prevents an excessive effusion from the pleuritic surface, and the facility of absorption being thus increased, a reciprocity of good is established between the two diseases. As might well be anticipated, a dullness of sound is observed when percussion is used; and we have two causes for its production, the engorged condition of the lung, thus preventing to a greater or less degree the entrance of the air—and secondly the existence of effusion. This not being so great as in simple pleurisy, does not prevent us from observing the sounds peculiar to pneumonia; the crepitant râle, bronchial respiration, and bronchophony, are all heard, and ægophony in connection with the other signs of effusion already named, leads us to know that inflammation of the pleura is present.

A much more common form of pleuro-pneumonia is produced by the extension of the inflammation of the parenchymatous tissue towards the surface, the pleura becoming consecutively implicated. If a portion only of the pulmonary mass be inflamed, the corresponding part of the pleura is alone found to be involved at first; but the costal surface to the same extent which is contiguous, soon itself takes on an inflammatory action; and here the pleurisy is partial. One is led sometimes to suspect this state of things without resorting even to physical signs, from the sharp and acute character of the pleuritic pain. The pneumonia has

continued for days, and if a proper treatment has been pursued, the pain, although it may have been severe at first, is very much moderated; and were we not aware that the pleura may become consecutively diseased, we should be surprised at this fresh accession of pain when the pneumonic symptoms themselves might be not at all aggravated.

When but a portion of the lung with its corresponding pleura is thus affected, the latter is clothed with a layer of false membrane as well as its contiguous and opposite surface; and in addition the serous or sero-purulent secretion of pleurisy supervenes. In this condition of things it is easy to establish the two lesions by their physical signs; the crepitant râle of pneumonia is of course no longer heard in this stage of the disease, but bronchial respiration and bronchophony indicate its presence; and we have already given the signs of pleurisy. If the totality of the lung and pleura be inflamed, there is rarely if ever effusion by reason of the distended condition of the former, as hitherto explained; but both surfaces of the latter are coated throughout with false membrane. The thoracic resonance becomes as dull as it is found to be in pleurisy with effusion; but in the case of which we now speak, there is always bronchophony, and that so exceedingly well marked, as to bear a resemblance to pectoriloquy. Did effusion exist, this would not be the case.

A third form of pleuro-pneumonia results from the extension of the pleuritic inflammation to the pulmonary tissue, and the physical signs necessarily follow an inverse order to those of the last. Should the effused fluid become suddenly great, as it occasionally happens, the probability of the complication is lessened, and the reason is understood from what has heretofore been said. It is then while the secretion is yet moderate, that we are to look for the signs of this form of the disease. To those of pleurisy, is added the râle crepitant, which establishes the existence of pneumonia. It is discoverable towards the root of the lung, under the arm-

pit, and beneath the clavicle ; inasmuch as these are the points less easily pressed upon by the effusion.

The inflamed pulmonary tissue assumes a peculiar modification from the compression which it undergoes. The inflammation is much more limited in extent than it otherwise would be, and is oftentimes confined to a few lobes, consequent upon the diminution of the inflammatory orgasm ; and its resolution does not take place with the same facility as does that of simple pneumonia. Its pathological character differs also from that of uncomplicated pneumonia ; the induration has not the granulated appearance of hepatization, possesses less firmness and more flaccidity, and when a portion of it is incised, no traces of the air-cells are discoverable, although the bronchial ramifications and blood-vessels are easily recognized.

It is unnecessary to observe that pleurisy is sometimes double ; that is to say, the pleuræ of both sides are inflamed at one and the same time.

*Hydrothorax*.—Dropsy of the chest is both symptomatic and idiopathic. The former is found to complicate both acute and chronic affections, such as fevers, and more particularly diseases of the heart and liver. Its aggression is generally sudden, making its appearance but a few hours, or at most a few days before death, and may in many cases be considered the proximate cause of the cessation of life. The latter owes its origin to those causes which induce dropsy of other cavities, and is both sthenic and asthenic in its type. More frequently perhaps it is the last, and its victims are those whose constitutions have been broken down by too long continued a gratification of their animal appetites.

The physical signs which accompany this disease are precisely those of pleurisy with effusion. The side is dilated, respiration is more or less inaudible, except towards the root of the lung, and flatness of sound on percussion and ægophony exist. The lung is crowded and pressed against the spine,

is flaccid, and no longer has the crepitating feel which belongs to it in a state of health.

The most prominent functional symptom, is an exceeding difficulty of respiration. In chronic pleurisy, with a large amount of effusion even, we have never seen the difficulty of breathing so distressing as in hydrothorax ; besides this, it is often paroxysmal in its character. The patient starts from his sleep as if immediate suffocation was about to terminate his life ; the doors and windows of his apartment are opened that he may gasp for air, and his agony is intense. Although the employment of the physical signs places the fact of effusion beyond a doubt, and enables us to measure its extent, yet are we free to admit that it is from the functional and local symptoms, that we are to obtain the distinctive characters between this disease and chronic pleurisy. The physical signs will indeed aid us in another point of view, for upon the functional we could not *alone* depend, inasmuch as the most important one (difficult breathing) is frequently an attendant upon other diseases ; as for instance hypertrophy of the heart, and aneurism of the aorta. The former teach us that there is effusion, while to the latter we must look for the nature of that effusion ; although it must be confessed that with every aid, it is in some cases impossible clearly to discriminate. As has been said, the function of respiration is carried on with more difficulty, generally, in hydrothorax, and the peculiar and pungent pain of pleurisy is absent. Dropsy of other cavities, and of the cellular tissue of the extremities, are frequent attendants.

That hydrothorax is often an inflammatory disease, is unquestionable ; and that it is occasionally the result of pure debility, is equally beyond a doubt ; but it would be foreign to our subject to enter into the general pathology of dropsy. Certain it is, that it differs from pleurisy most essentially ; for upon an examination after death, important discrepancies in the anatomical character of the two affections are revealed. In the disease of which we are speaking, no false membranes



or accidental formations are discovered. The lung, it is true, is compressed as in pleurisy, by an accumulated secretion, which is almost always a limpid serosity, never purulent, but containing occasionally flocculent albuminous particles.

*Pneumo-thorax.*—There are three distinct varieties of this affection, which some of the French authorities appear to think is of no very uncommon occurrence. It escaped, however, the penetrating glance of the indefatigable Bayle, and its true pathology has only within the few last years been correctly known. The complication is generally met with during the closing scene of life, induced by other diseases; and in truth, one of its forms at least may be regarded as the last link in the chain of pleuritic lesions.

Pneumo-thorax is sometimes simple; that is, the cavity of the pleura contains nothing more than an accumulation of air, and no portion of this membrane is found upon dissection to be in a state of disease. The lung is compressed in the direction of its root, in the same manner as it would, were the accumulation a liquid one; and this arrangement gives rise to a physical sign common to both. Respiration becomes more or less inaudible, in proportion to the quantity of the æriform secretion, (is it a secretion?) and is not heard except towards the spinal attachment of the lung. This it will be remembered, is one of the characters of pleurisy with effusion; but a mistake can scarcely arise, inasmuch as in pleurisy the breathing is often perceptible, unless the effusion be excessive, in other parts of the chest than the one just named. The air being a worse conductor of sounds than liquids, offers a sufficient explanation.

Percussion upon the thoracic parietes, affords a loud, clear and hollow sound, and distention is observed as in liquid effusion. If the accumulation be not considerable, the sound although louder than natural, may lead the inexperienced into some doubt as to which is really the affected side; for the healthy one giving out a duller resonance than the other,

may from this circumstance alone, be regarded as the seat of lesion. Besides, the distention of the diseased side, unless so great as to leave no possible doubt upon the mind of any, may be thought to be natural; while it may be supposed that the other although normal, is somewhat contracted in consequence of an ancient pleurisy. But these discordant circumstances will all be reconciled by resorting to auscultation; we have explained above the true condition of respiration in simple pneumo-thorax. It is hardly necessary to observe that the functional symptoms are exceedingly obscure, and the reasons are obvious. Difficulty of breathing is the most prominent; but it is not pathognomonic as it belongs to other affections.

The form of the disease just mentioned is certainly not a frequent one; the two last now to be described are oftener encountered. Pleurisy, latent or well marked, idiopathic or consecutive, forms the primary pathological feature; a serous or sero-purulent effusion results, and the development of air supposed to proceed, and probably with reason from the decomposition of the secreted fluid, forms the last link in the chain of cause and effect. The original disease is known to have existed by its appropriate physical signs which have been related. When the gas is evolved, these are varied, and an addition of others is made to them. The sound on percussion, which before the evolution of the gaseous fluid was dull, becomes changed into a clear resonance, at least in the superior portion of the thorax, and the respiration which may have been audible to a greater or less extent, depending upon causes already explained, is no longer heard. The resonance however varies, it must be acknowledged, according to circumstances; it may even be less on the affected side than the other, and yet the disease may exist, for the liquid effusion may be so abundant, as to prevent any decided resonance. But by resorting to auscultation, little or no difficulty will remain in establishing a proper diagnosis.

Another mean by which we are enabled to judge of the

presence of hydro-pneumo-thorax, is that which has been denominated the hippocratic succussion. In simple liquid effusion into the thoracic cavity it is absent ; but when the two secretions exist at one and the same time, it is very distinctly noticed ; we mean merely to state the fact without entering upon the reasons. The mode of procedure is simple ; the patient is placed in a sitting posture, and while the body is quickly though moderately shaken by applying the hands upon his shoulders, the agitation of the fluid which is thus produced, is very clearly heard through the stethoscope ; and indeed the application of the naked ear will sometimes detect it.

The metallic tinkling is also one of the physical signs in this variety of the disease ; but it occurs more frequently in the last, which will be presently mentioned. In order to produce it, the patient must first occupy a recumbent position ; the fluid is thus made to diffuse itself more or less over the surface of the affected side ; and if the individual be then requested to rise, some drops of the effusion which may have adhered to the upper portion of the thorax, will be heard to fall into the general mass of fluid which is now situated below. The sound produced, is similar to that elicited from the sudden contact of two bits of metal ; and hence is its name derived.

The last variety of hydro-pneumo-thorax, is that wherein a communication exists between the cavity of the pleura and one or more of the bronchial ramifications, in consequence of an opening made in that portion of the membrane which covers the lung. The air which then finds access is of course atmospheric, and its presence alone, independent of any prior lesion, is sufficient to excite pleurisy ; and this, as in those cases of the disease idiopathically formed, results in effusion. The lesions which may induce the communications referred to, also vary ; sometimes a rupture of the pleura is produced by external violence ; occasionally a gangrenous eschar interrupts its integrity, and more fre-

quently still, the solution of continuity is the product of a softened and suppurating tubercle. Hence the disease is often met with, during the last stage of phthisis pulmonalis, and this is by far the most common form. When we come to speak of phthisis, we shall again refer to this point, first brought to the notice of the profession, we believe, by the accurate observation of M. Louis.

Besides the various physical signs which belong to this disease, and which have been related, another is revealed which appertains solely to the form now under consideration; this is the bottle-buzzing or amphoric sound, and results from the passage of air through the fistulous opening; the noise is similar to that made by blowing into an empty bottle. The metallic tinkling too, is of more common occurrence in this than in the other form of the affection, and is produced when the patient speaks, coughs, or forcibly inspires, by thus agitating the air situated above the liquid effusion; and where it does appear, after having established by other signs the existence of hydro-pneumo-thorax, it may be regarded as a pretty sure evidence of a triple lesion. When heard in connection with the amphoric sound, all doubt must at once yield to the most entire certainty.

*Catarrh.*—Inflammation of the bronchial mucous surface, has been divided into several kinds, depending rather upon the character of the expuition than upon the variation of their physical signs, and with all the nicety which we are enabled to exercise, it is sometimes a little difficult very clearly to discriminate. This remark is referable to the two first varieties of which we shall speak, viz.: the simple and pituitary, and is applicable perhaps to the chronic rather than to the acute stage. We make this observation from what we have more than once witnessed; the cases to which we refer, exhibited for some time, very decidedly, the peculiar sputa of simple chronic catarrh; there then appeared to be an intermixture of this with the pituitary, which

last continued throughout the disease in a much larger proportion than the former.

Catarrh or bronchitis, is both idiopathic and symptomatic ; it is observed to complicate several forms of fever, and in such instances is generally latent ; that is, it can be recognized only by its physical signs. In many affections of the lungs, it is met with as a secondary disease, in pneumonia and pleurisy for example ; and where it has existed originally in its idiopathic form for a considerable length of time, it may, in its turn, induce emphysema or dilatation of the bronchiæ.

The opinion has been a common one, nor is it yet perhaps entirely discarded, that inflammation of the bronchial mucous tissue, might extend to the pulmonary parenchyma, and thus produce pneumonia. The uncertainty of the diagnosis, when based solely upon functional symptoms, has hitherto been insufficient to correct, or we might rather say, has tended to propagate the error. But those best acquainted with the physical signs belonging to the two diseases, tell us they have never seen such a complication. It is only in the acute form, however, that the idea could for a moment be entertained, for we must all have witnessed numerous cases of chronic catarrh, without a solitary symptom of pneumonia, either physical or functional ; and from the very fact that the disease is thus known to exist for months and even years, ought we still farther to argue the improbability of the inflammation extending beyond its primary location.

Phthisis pulmonalis has also been thought to be the result of catarrh, or to use the common phrase, a "neglected cold." It would carry us too far from our original purpose, to enter upon the extended discussion to which this subject would give rise. All that will now be said, is that the investigations of pathology have taught a different doctrine in these latter days. We now know that the stethoscope reveals the existence of phthisis, without one sign of catarrh, and dissection verifies the diagnosis ; the reverse of



the proposition when tested in the same way is no less true, and in how small a proportion of cases is it, that tubercle is ever found in any other portion of the lung than its parenchymatous tissue ! We have seen numerous dissections of phthisical subjects, in some of whom the pleura, to a greater or less extent, was found studded with tubercles ; in *one* instance only, have we observed them seated in the mucous surface, and that to a very small extent.

Simple acute catarrh, and the same may be said of the other varieties, may occupy the whole or a portion only of the mucous surface of one or both lungs, and the functional symptoms will generally be in proportion to the extent of the inflammation. These will not all be mentioned, for they are sufficiently well known ; and if the diagnosis may pretty clearly be established by their aid alone, a knowledge of the physical signs will not only render it certain, but will clear up all doubt as to any complication.

Every part of the thorax resounds well upon percussion, for there is no pleuritic effusion or indurated or engorged parenchyma to produce a different result. Respiration is sometimes suspended, and very frequently it is diminished. This may be attributable to one of two causes, or to ~~both~~ both at the same time ; the tumefaction of the mucous membrane, and the secretion which lines the bronchial tubes, may prevent partially or wholly the ingress of the air ; and not even in the latter case should a dullness of sound be discovered on percussion, and experiment proves that it is not ; for the air, although it may not freely enter, is still found incarcerated in the numerous air-cells, in sufficient quantity to produce a resonance. It also happens, that where the respiration may have been suspended or diminished, it is again distinctly heard a few moments after in its full intensity ; the secretion which choked up the bronchial tubes has been removed by the process of expectoration.

The tumefaction of the membrane, consequent upon its inflammation, narrows and restricts the ramifications of the

bronchiæ in proportion to its violence, and in the early stage of the disease, before secretion takes place, this anatomical feature gives rise to a peculiar modification of respiration. The air rushing into the narrowed tubes, produces a *sonorous* noise which is easily appreciated by the instrument or the unassisted ear; it is called the sonorous râle; sometimes it resembles the distant cooing of the dove, or the slow movement of the bow over the larger string of the bass-viol. To this is frequently conjoined the *sibilant* râle, or a sort of whistling, which varying in intensity, preserves sufficiently well its characteristic sound; it arises from the difficulty with which the air penetrates the smaller bronchial tubes, in consequence of the distention of their lining membrane; and it may also proceed from the partial obstruction of branches of the same calibre by viscid mucous. Occasionally it resembles the chirping of small birds, or the clicking of a minute valve.

When an abundant secretion is poured into the bronchial tubes, the signs which we have just mentioned in a great measure cease, for the conditions on which they depended no longer exist. The air now traverses a fluid of greater or less consistency, and as the secretion augments, so does the mucous râle predominate and the others diminish. The greater the consistence of the fluid, the *larger* will be the rattle, although it may not be more clearly heard than where the bubbles are smaller. The expectoration is at first serous, ropy, and pearl-colored; it soon assumes a thicker consistence, becomes demi-opaque, whitish or pale yellow, and is mixed with minute bubbles of air.

In the chronic form of simple catarrh the respiration is often difficult when even moderate exercise is taken, and should the disease exist in a considerable portion of the lungs, many of the symptoms of phthisis are developed; and so close is sometimes the resemblance, that none other than the physical signs can furnish an indubitable diagnosis. When the affection is not thus intense, the symptoms fre-

quently yield during the warm months of summer, and the patient flatters himself that he is about to experience a complete restoration to health; but these appearances may be delusive; the disease continues in its latent form, and the return of cold weather brings with it the former and almost forgotten train of symptoms. The sonorous and sibilant râles are but seldom heard, for the tumefaction of the mucous lining has much diminished, and they are replaced by the mucous rattle consequent upon the secretion which now occupies the bronchial branches. Respiration is rarely suspended, for reasons which may be gathered from the last remark; it is diminished however, and may recur again but a moment after, as we have already explained. Occasionally it is observed to be *puerile* in a very great degree, while at the same time the patient may labor under a most disagreeable sense of suffocation. This condition of the respiratory function is remarkable; the instrument would lead us to believe that it is performed in its most perfect manner, but the sensations of the patient induce him to think that it is about to cease perhaps forever. "An increase in the necessity for respiration," are the words which Laennec uses to explain the phenomenon. The appearances of the sputa in the acute form have been related; they now become less viscous, more opaque, sometimes greyish, from a partial admixture with the black matter of the glands; but more frequently white and puriform. This is one of the forms of asthma.

*Pituitary Catarrh*, is characterized by nearly the same physical signs as the variety of which we have spoken; the tumefaction of the mucous membrane is not so great, and hence arises the little difference which is found to occur. The chest resounds well, and the sibilant and sonorous râles are recognized; respiration is not often suspended although it may be diminished, and why it should be thus is obvious. When the disease begins to yield, the mucous ronchus predominates; but it differs a little from the same rôle in simple

or mucous catarrh. It is not so large; the bubbles burst upon the surface of a fluid of less consistence; the expectoration is colorless, transparent and ropy; a foamy or spumous superstratum floats upon its surface, which, when removed, discovers a fluid similar in appearance to the white of an egg, more or less diluted. When this form of catarrh becomes chronic, the sputa remain throughout as they have just been described, and it is perhaps in this rather than in the acute stage, that the affection is characterized by paroxysms. Now it is that the oppression and dyspnœa become excessive, the face is livid, and cerebral congestion to a greater or less extent takes place. During the access, but little or no expectoration is observed; presently it occurs and the patient experiences relief, for the air-cells are freed from obstruction. As time wears on, the paroxysms become more frequent and of longer duration. Expuition is sometimes enormous, and during the intervals of access, the unhappy subject grows more and more pale and emaciated. This is another variety of asthma;—it is the catarrhus suffocans of the nosologists.

*Dry Catarrh* exists rather in a chronic and latent, than an acute form; and it is so named because the expectoration is at all times scanty; frequently there is so little that the patient will tell you that he does not expectorate at all, and when he does notice it, it is in the morning when he leaves his bed. It is then observed to be of a pearly color, or vitreous, and somewhat globular from the position it may have occupied in the bronchiæ. The chest, as in the other varieties, is resonant; respiration is feeble, or is not heard in the affected points; it then becomes audible where before there was none, and the reverse of this also happens. The sibilant râle predominates, and by reason of the character of the secretion, the mucous rattle is seldom heard. The disease is found to occupy more generally the smaller ramifications, which when obstructed by the tumefaction of their lining membrane or by the viscid secretion, prevents in

proportion to the cause which is acting the freedom of respiration. The subject is asthmatic; and as expuition is more or less easily performed, so is there more or less of dyspnœa.

*Emphysema.*—Emphysema is of two kinds, the vesicular and the interlobular, and it may be said without the fear of contradiction, that the functional symptoms alone could never reveal the true character of the lesion. M. Louis, to whom we have had frequent occasion to refer, remarked to the writer, that patients from this side of the Atlantic had often sought his advice under the supposition, confirmed by their former attendants, that they labored under phthisis. A closer investigation into the mere functional derangements of the two diseases, ought to have dispelled the error.

The pathology of emphysema is the dilatation and permanent distention of the air vesicles of the lung. To examine with nicety the disposition of the enlarged cells, a dry preparation of the organ should be made; but even in its recent state, the unassisted eye is almost always sufficient of itself to detect the lesion. Upon inspecting the borders of the lung particularly, numerous cells are observed to be enlarged in size, and they vary considerably in this respect. As a general rule, it may be said that they equal in magnitude the head of a common pin; when larger, it arises in some instances from the extreme dilatation of a single vesicle, or from the reunion of two or more consecutive to a rupture of the delicate partitions which separate them. The cells rarely project beyond the level surface of the pleura, and the fact that there is no extravasation of air into the cellular tissue which connects this membrane with the parenchymatous structure of the lung, is amply proved from the impossibility of displacing the collection of air, by any degree of force short of rupturing the cell itself.

When one, or several vesicles united, are enormously distended, their projection beyond the level of the pleura does occasionally occur, and in proportion to the continued



activity of the cause does it increase. Under such circumstances they have been seen to possess a sort of neck or pedicle, and when opened by the knife their continuity with the extreme or ultimate divisions of the bronchiæ is clearly manifest. In the early part of this essay it was remarked, that the parietes of all the hollow organs, when subjected to dilatation for even a short space of time, became more or less hypertrophied. The same thing occurs in the disease under consideration, and it should be borne in mind, for upon this fact depends in some degree the prolonged incarceration of the air within the cells; and for the same reason is it, that when a projecting vesicle is divided its sides do not collapse.

When the chest is opened and the lungs are healthy, they occupy a position along the spinal column, and have evidently receded from the lateral and anterior walls of the cavity. But a very different state of things takes place whenever they are emphysematous; no sooner is the incision made, and the more so proportionably to the extent of the disease, than they forcibly escape from the osseous parietes which contained them;—and when pressed by the fingers, the feeling of crepitation which belongs to them in their natural condition is measurably diminished. In consequence of the severe and prolonged efforts which are made to respire, the blood is thrown back upon the heart and large vessels, and a simple hypertrophy or dilatation with hypertrophy of these organs, is very often found upon examination.

The functional symptoms are dyspnœa, produced by exercise; cough, which is not frequent, and generally attended by very moderate expectoration; when it does occur it is transparent, viscid, and frothy. During the paroxysms, (for this like the different varieties of catarrh is a paroxysmal affection,) the dyspnœa becomes excessive, the lips appear swelled and violet-colored, and cerebral congestion to a certain extent, is added to the train of symptoms. When percussion is made over the emphysematous portions of the lung, a preternaturally full and clear sound is devel-

oped, and as the function of respiration is enfeebled and diminished, if not entirely suspended, by reason of the obstruction to the entrance of the air, and the pressure of the dilated upon the healthy cells, we may reasonably look upon these facts conjoined as affording strong evidence of the existence of the disease. The only case, if reliance be placed exclusively upon these signs with which it can be confounded, is pneumo-thorax. But besides that the absence of respiration is more general in this affection than in emphysema, we have the physical evidences of the catarrhal condition of the mucous membrane, which will be adverted to when we speak of the causes. The *râle sibilant*, owing to the displacement of the bronchial secretion in the smaller branches is clearly heard, although the respiration is feeble. The dry *crepitant* ronchus is occasionally distinguished, but not often, and appears to arise in vesicular emphysema from the penetration of the air into the dry and dilated cells. A convexity of the parietes of the chest, proportioned to the degree and extent of the diseased lung, is very clearly perceptible; the intercostal spaces are widened, and when both lungs are much affected, instead of the flattened surface which the thorax presents anteriorly, its form becomes circular. The disease may continue for years; it is one of the forms of asthma, the paroxysms of which yield when free expuition is established.

Among the occasional causes of emphysema, may be classed the frequent playing upon wind instruments, and all violent efforts in the execution of which the air is retained within the lungs; the cells are thus dilated, and when such exertions are frequently repeated, the dilatation becomes permanent. To this category may be added pressure upon the bronchiæ from tumors, or their obstruction caused by polypi, &c. But in a very large majority of cases, the disease succeeds to long continued and extensive dry catarrh; and by recurring to the pathology of this form of catarrh, the mechanism of its production is without difficulty explained.

The first step is the obstruction of the more minute bronchial branches, by the tumefaction of their lining membrane and the viscid secretion which results ; and as inspiration is performed with more energy than expiration, the air which is inhaled in sufficient quantities to fill at least partially the vesicles during the first process, cannot *all* be forced out when the individual makes an effort to expire. A portion, then, remains, and as the respiratory function continues to be performed, the cells are more and more distended, and ultimately become dilated. As the dilatation is effected and continued, so do the vesicular parietes become hypertrophied ; they consequently lose in a measure their organic contractility, and it is not unreasonable to regard this as one of the causes of the permanent retention of the air. Both their own, and the expulsive efforts belonging to the muscles are embarrassed.

Another mode by which dilatation has been accounted for, is the rarefaction of the air after it has gained access to the vesicles. At the moment of its introduction, it is supposed to have lost but little of its atmospheric temperature ; this is speedily exalted by the greater animal heat, and the air thus becomes rarefied. The idea is at least ingenious and beautiful in theory, if it be not true in fact.

*Interlobular* emphysema is produced by the forcible retention of the air consequent upon severe and prolonged efforts, such as the exertions of childbirth, and raising burdens disproportionate to the strength of the individual ; obstructions in the larger bronchiæ by interfering with expiration, are also causes of this disease, and children who have been the subjects of croup are now and then affected with it.

The extravasation or infiltration of air into the inter-areolar tissue of the lung, constitutes the real character of this variety of the disease ; and the lesion is due to the rupture of the thin parietes of the vesicles. When the extravasation is considerable the air is often seen beneath the pulmonary pleura, and as it may be displaced and moved in different directions by simple pressure, it is very evident that it is not

contained within a distended cell. Single lobes may be surrounded by the air, which is thus retained by means of the delicate cellular partitions which enclose them; or as frequently happens, two or more lobuli are conjoined and isolated, forming as it were a larger lobe around which the air is situated.

When the affection has existed for some time, the cellular partitions which mark out the several lobes, increase in thickness to a line or more; there is in fact a hypertrophy of this tissue, and they may be seen passing in various directions and at different angles, and sometimes parallel to each other; the pulmonary parenchyma, situated between them, is of course healthy, for this is not the seat of the disease.

The chest resounds well on percussion, and if the affection be extensive, the resonance is preternaturally loud; respiration is diminished as the lobes are pressed upon by the extravasated air; but as the resonance is still perfect, we have no reason to suspect the presence of any disease in which sanguine engorgement constitutes the principal feature. The dry crepitant râle with large bubbles is given as pathognomonic of interlobular emphysema; it is supposed with reason, to arise from the bursting of the over distended and weakened air-cells. Dyspnœa is the most prominent functional symptom, and the paroxysms of the vesicular form of the disease particularly, constitute another variety of asthma. The access is occasionally distressing in the extreme, but yields speedily to copious expuition.

*Asthma.*—When we consider the several forms of catarrh and emphysema of which we have given the succinct history, it appears evident that asthma is in very many instances nothing more than a symptom of an original and independent disease. This fact will demonstrate the importance of clearly elucidating our diagnosis by every available mean within our reach; and it cannot now be questioned that the study of physical signs is the only sure and undoubted resource. Without the aid which these will assuredly give,

every remedial measure must be prescribed at random, and it is time that empiricism should yield to the clear light of reason.

That asthma is sometimes an idiopathic affection we are scarcely permitted to doubt, because cases are reported by those most skilful in the use of the stethoscope, in which this instrument was impotent to detect the slightest lesion; and where opportunities for making examination after death have occurred, no derangement of structure has been observed. To such forms of the disease can alone be appropriated the names of nervous and spasmodic; and nearly every thing that can be said relatively to the pathological condition necessary to the production of symptoms, must from the nature of things be hypothetical.

It is not necessary to our purpose to describe the symptoms of nervous asthma, nor can we advance one step our present knowledge of the subject, by reiterating the oft-repeated doctrine of the deranged and unequal distribution of the nervous energies; whether in such cases the lungs receive more or less than their accustomed portion, who can tell? But there is an idea, first suggested, if our memory does not deceive us, in the very excellent little work of Mr. Teale on Neuralgic affections, that the form of disease now under consideration may be due to an irritation of the rachidian column; and our recollection inclines us to the belief that several cases were treated upon this principle with the most entire success. The point of irritation is discovered by pressing upon the spinous processes of the vertebræ, when some degree of tenderness is immediately felt; and notwithstanding it is impossible in the present state of the science to offer a satisfactory explanation of the fact, yet is it not the less true. As to ourselves we have met with no case referrible to a spinal lesion, and therefore speak not from any experience of our own.

Although, as already remarked, it is incompetent for the instrument to detect any structural derangement, yet does it



reveal a singular peculiarity in the respiratory function. While the patient is gasping for breath, and suffering all the agonies of an anticipated suffocation, the respiration as studied through the medium of the stethoscope, appears to be carried on with more than its usual intensity ; the sensation is experienced by the observer, as if the vesicles were distended to their utmost, by the rapid and unobstructed ingress of the air ; it has become eminently *puerile* in its character, and it must be from some derangement of the nervous influence, that this increased necessity for respiration is awakened. As soon as the paroxysm has finished, the gentle respiratory murmur of health is again recognized. It is not pretended that puerile respiration is alone heard in simple nervous asthma ; in the case of chronic dry catarrh, where dyspnœa is the predominant symptom of the paroxysm, it is often observed, and there is no other way of accounting for its production, than by admitting the accessory influence of nervous derangement.

Many years since, before pathological anatomy had asserted its just claim to the elucidation of disease, every attack of asthma was supposed to be spasmodic ; and although subsequent research has abundantly demonstrated the falsity of the hypothesis, yet is there reason to believe from the structure of the bronchial branches, that there are cases which belong to this category. Lauth, Reisseissen, and other anatomists, have proved the existence of circular muscular fibres in the minutest ramifications of the bronchiæ, and analogy might lead to the inference that they entered into the formation of the parietes of the air-cells. A similar train of functional symptoms belongs to this, as to the other varieties of asthma ; and when spasm, either of the smaller bronchiæ or the air vesicles, or both at one and the same time exists, the entrance of the air is impeded, and respiration must be more or less diminished. It occurs in many instances, that traces of slight catarrh are discoverable by the instrument, but not sufficient to account for

the paroxysm. Whatever influence this circumstance may possess, it should be regarded as acting conjointly with the more active one of spasm; and if it be allowable to draw a pathological deduction from the effect of a remedial agent, this explanation might be considered as at least plausible. We have in our eye the case of a medical gentleman, in whom the affection was probably altogether catarrhal in its origin, for there is expectoration; the paroxysms of the disease are both relieved and rendered less frequent by the anti-spasmodic virtues of tobacco. We speak problematically, for we have made no examination.

*Dilatation of the Bronchiæ.*—The researches of modern observers have proved not only the existence, but the frequent occurrence of this disease. Resembling as it does in a certain stage of its progress, phthisis pulmonalis, it is more than probable that it may frequently have been mistaken for that affection; and the error must have remained always uncorrected during life, had not the discovery of physical signs directed us to a certain knowledge of the lesion.

Dilatation of the bronchiæ assumes various forms, and where there is a simple enlargement without alteration in the form of the branch or branches, it often requires the most careful and minute examinations to detect its presence; where this is the character of the alteration, the dilated branch is larger than the one from which it springs, which is never the case in the natural progression towards their ultimate divisions. Sometimes the branch forms a sort of cul-de-sac, at the bottom and sides of which may be noticed the orifices of several smaller bronchiæ which preserve their normal diameters. In other cases the natural form of the tube is altered; a single or several successive cavities are observed in its course, and many contiguous branches may be affected in a similar manner. The mucous membrane of the diseased bronchiæ, seldom or never remains in tact; it becomes generally or unequally hypertrophied, soft, and of a red or deep violet color. Occasionally the entire parietes is

observed to be extremely thin, and resembles in its tenuity the pellicle of an onion. The cellular layer, external to the branch and connecting it with the pulmonary tissue, is frequently rendered firm and dense, and around the smaller ramifications seems to be almost cartilaginous; and the intermediate parenchymatous structure is compressed, deprived of air and flaccid, assimilating itself in appearance to that condition of the lung which is the effect of pleuritic effusion. The minute bronchiæ are oftener dilated than those of larger calibre, because in the latter, expuition is more easily performed, and in a majority of instances the superior lobe becomes the principal seat of the affection; rarely is the entire lung diseased.

The stethoscopic signs which result from this lesion are generally so well marked, as to leave us free from all doubt. Should a case occur wherein all or nearly all the bronchial branches are dilated, the resonance elicited on percussion would be duller than natural; for there would be pressure upon the pulmonary tissue in numerous points, and the vesicles could not receive their due quantum of air; but this in truth is very seldom observed, because it rarely happens that the disease is so extensive. Confined to a smaller space, the variation from a healthy sound is scarcely appreciated; but the respiration is bronchial, and bronchophony exists, both referrible to the pressure exerted upon the surrounding tissue by the dilated branch, preventing the free ingress of air into cells, and thus causing an unnatural vocal and respiratory resonance in the affected part. When the dilatation is somewhat considerable, nearly freed from its secretion by recent expectoration, and the surrounding portion of the lung measurably hardened, pectoriloquy in its most perfect form is added to the signs just mentioned; thus, the first intonation of the voice is heard resounding in the cavity, and appears distinctly to pass through the instrument and enter the ear of the observer. The mucous râle with large bubbles is produced by the air rushing into the cavity, which

if it has become extensive, gives to the respiration the peculiar sound which is called *cavernous*; and the same character under similar circumstances belongs to the cough; when there is no cavity but simply a dilatation, the resonance of cough in consequence of the pressure, is confined and limited to the diseased part; and we have that variety denominated *tubular* or bronchial cough. If the dilatation be situated near the surface of the lung, and the secretion be not in too great a quantity, respiration, cough, and the voice, give the sensation of the *veiled-blowing*; something like a thin veil seems to interpose and prevent the passage of the air into the ear; the superior or external wall of the cavity must be thin, and free from compression and hardness. Diffused bronchophony is heard when the dilatation extends to several neighboring branches, and is not very great in any.

The functional symptoms are wholly inadequate of themselves to establish the diagnosis. The pulse is scarcely ever disturbed, and respiration is performed as usual, unless the patient uses active exertion; the expectoration is at first mucous, ultimately puriform, and occasionally it is passed up in large quantities. When there exists a large cavity, the stethoscopic signs denoting its presence, are exactly those of a tuberculous excavation; and how are we to distinguish? In the first place, if phthisis were the disease, we should frequently have the physical signs of the tubercles in their various stages of development, in other portions of the lung or in both lungs; for when excavations have formed in the superior, they (the tubercles) almost always exist in their crude condition to a greater or less extent in the inferior lobes. Another important distinctive character is, that in dilatation of the bronchiæ, there is little or no *emaciation*; while in phthisis the function of hæmatisis is so seriously deranged, that it sooner or later supervenes. Upon this single symptom have we seen the diagnosis based, and autopsy proved its correctness. The patient died of an acute

disease ; but the discriminating tact of M. Louis, is sufficient to detect the minutest lesion in organs, when there are but few functional evidences of their derangement.

The cause which seems to predispose the bronchiæ to become dilated, is the prolonged continuance of catarrh ; and as it depends too upon the *amount* of expectoration, the disease is observed to succeed with greater certainty to the chronic and mucous form of that affection. The secreted matter remaining in the bronchial branches for a certain time, necessarily tends to expand and dilate them ; and as the natural tone of health is diminished more and more by the persistence of their catarrhal condition, the dilating influence of the collected sputa increases imperceptibly from day to day. This influence is also continuous ; for no sooner is expuition of the contained secretion accomplished, than a new collection occupies its place.

It is not a little singular that pressure upon an organized and vital part should produce the very opposite conditions of hypertrophy and tenuity ; that the fact is so, we have a right to believe, because the agent is clearly discernable, and the minutest inquiry has hitherto been unavailing in detecting any other. That circumstances may exist so intimately blended with the vital actions as to escape observation, may certainly be true ; and all that we can now do, is to acknowledge the fact, and hope that at some future day the gradual progress of science may dispel the difficulty.

We now see why it is that an extreme thinness of a branch is sometimes observed on the one hand, while on the other, hypertrophy with dilatation results ; both in the present condition of our knowledge referrible to the same cause. Hypertrophy, however, occurs from a simple increase of nutrition ; and this circumstance has led M. Andral to imagine that in the case of a dilated bronchiæ, it may sometimes be viewed as the first link in the chain of causes ; an augmented secretion of the affected part supervenes, and dilatation follows.



*Pneumonia.*—The labors of the pathologist have very clearly demonstrated the lesion which constitutes this disease, and traced out by appropriate signs, the differences which belong to each of its stages. The first is that of simple engouement, as contradistinguished from sanguine engouement; it is an infarcted condition of the parenchyma, which is heavier, and firmer, and more compact, than in its natural state, and still crepitates more or less when pressed between the fingers. There is a veritable effusion into the pulmonary tissue, serous and sanguineous in its aspect, which permits the pitting of the lung on pressure, and which flows out abundantly when the organ is incised.

When induration succeeds, crepitation is no longer felt; the inflamed portion is much more firm than in its stage of engouement, and assumes that peculiar liver-like appearance, from whence is derived the name of hepatization. Make an incision into the lung and it is seen to be red, greyish, or violet color; an evident resistance is felt to the passage of the knife; the cellular partitions, insulating the several lobes, seem to have remained untouched, and are the more clearly discernable by the contrast; the serosity is much diminished in quantity, thicker and more bloody, and may be scraped from the cut surface by the handle of the scalpel; matter slightly puriform, is occasionally pressed out. A very singular appearance of the tissue is its granulation; and this characteristic seems to be one of the distinguishing marks between hepatization and carnification. It is the result of the thickened and distended parietes of the minute air-cells; their forms are perfectly appreciated, and their color is either red or grey, from which the terms red or grey granulation are now admitted into medical language. There is no *dilatation* of the vesicles, or if there be, it of course passes away with the subsidence of the inflammation.

Purulent infiltration is the last link (if we exclude abscess) in the chain of cause and effect. The parenchyma still retains its hardness and its granulated aspect; yellow

points are at first observed, and as these spread and coalesce, the whole diseased mass becomes of a pale yellow colour. The lung is now softer and the granulations begin proportionably to disappear; and a viscid, opaque and puriform matter may be scraped off with the scalpel. We have said that the affected portion of the lung is of a pale yellow colour; yet it is not always so, for as the black matter which belongs to it in a state of health abounds, so does it influence the appearance of the organ. Upon this fact depend the variations of colour so frequently observed in the several stages of the disease; the hepatization is dark red, or ash colored, or grey, as it is absent or present.

Purulent collections or vomicae are very rarely found as the termination of pneumonia, notwithstanding all that has been said by the numerous authorities upon this subject. Laennec very seldom indeed met with them; Andral bears the same testimony to their infrequency, and we heard M. Louis remark, that he had seen them but two or three times among the very numerous dissections which he had made of pneumonic patients. Whenever they have occurred, the disease has been partial and confined to one lung; were it general in one, and for a still stronger reason in both, death might take place from the serious impediment to respiration, before the stage of suppuration could supervene. This species of vomicae differs essentially from the tuberculous excavations of phthisis; in the former the surrounding tissue is soft and infiltrated with pus, while in the last this is never the case. These will hereafter be described.

Observation testifies to the fact, that pneumonia more frequently invades the right lung than the left, and the inferior rather than its superior portion; of this truth we shall make further use when we speak of phthisis. When the different stages of the disease exist at the same time, (which they may do,) it is observed to be more advanced in the lower part of the organ, and it has occasionally been seen to occupy separate lobes, while the tissue intermediate

to these remains healthy. To this condition the name of lobular pneumonia has been assigned.

Chronic inflammation of the respiratory organ is not often met with, at least in its uncomplicated character; for the tissue is so vascular, that the disease if not arrested speedily, hurries on through its several stages. As an original affection, or one succeeding to the acute form, it is therefore of rare occurrence. It is a more frequent attendant upon gangrenous eschars and tuberculous excavations; the surrounding parenchyma is of a livid redness, and so firm that it grates beneath the scalpel; the granulations are also much more distinct than in acute pneumonia. When latent it is almost always complicated with some original disease; as pleurisy for example, thus forming a pleuro-pneumonia of which we have already spoken; with many of the eruptive fevers and chronic affections, and when consequent upon important surgical operations, it is often the cause of death.

We shall not lengthen our remarks by relating the general and functional symptoms of pneumonia, but would merely refer to what has been said when treating of pleurisy, to show that there is occasionally a little difficulty in distinguishing the two diseases, particularly in their early stage. There is one however which we cannot omit, for we believe it to be peculiar to pneumonia; we allude to the expectoration, and so much dependence do we place upon this, that we have frequently foretold the character of the disease, before resorting to other means.

When the sputa are collected in a vessel, they form a thick and tenacious mass, and adhere very intimately to its sides. Their aspect varies according to the stage of the disease; they are frequently intermixed with blood; of a yellowish striated appearance; seldom or never do they fail to assume the color of the rust of iron, all of which is no doubt owing to the variable quantity of blood contained in them. Bubbles of air are seen floating on the top, and thus remain for a length of time, on account of the viscosity of the secretion in

which they are contained. When induration is completely established, they become less viscid and less frothy; and during the period of purulent infiltration are mucous in their character; sometimes they are puriform.

The stethoscopic signs which belong to pneumonia vary according to its different states. In its first, or that of simple engouement, the *crepitant* rattle is alone heard; small bubbles are heard to burst upon the surface of a thin fluid at equal intervals of time, and the sound resembles the crepitation of salt when thrown upon the fire;—it is produced by the air passing into the cells containing a serosity more or less sanguineous. The thorax still affords a resonance on percussion, and the respiratory murmur is yet audible, although its intensity may be diminished. The surface over which the *râle* is detected, marks out exactly the extent of the disease. In proportion to the accession of hepatization does the crepitant *ronchus* diminish; this appears to be first established towards the centre of the affected portion of the lung; for while the signs which denote the induration progress, the crepitant *râle* may yet be distinguished in the surrounding tissue. In the hepatized part the murmur of respiration is gone, nor as we have just said, is there any *râle*; percussion yields a dull and flat sound, and bronchophony and bronchial respiration succeed. The former belongs to the voice; its resonance is no longer general for the part is engorged, and it only takes place in those bronchiæ which remain still unobstructed, and from whence it is transmitted to the ear through the medium of the hardened tissue; the same anatomical condition explains the production of the latter. Bronchial cough depends upon the same circumstances. When the hepatization surrounds one or more bronchial tubes which pass very near to the surface of the lung, the observer easily appreciates what has been called the *blowing respiration*; the air seems as if it were drawn from and then thrown back upon the ear during the process of inspiration and expiration. Why it is only heard when the induration is seated near the

surface of the organ, is readily understood from what has preceded. Should the disease have advanced to the stage of purulent infiltration, the mucous râle supervenes, and it is heard now for the first time; if it existed before, and it is nearly certain that it must, for the lining membrane of the bronchiæ contained within the affected portion of the lung is always found to be more or less inflamed, it has been masked by the greater intensity of the bronchial respiration. This then is one of the conditions upon which the râle depends, and it is also due to the *occasional* passage of puriform matter into the tubes as shown in a few instances by the appearance of the sputa. That it is not indicative of simple catarrh, we know from the preceding signs and those which still exist.

The signs of abscess are several; thus we have pectoriloquy either perfect or imperfect, the blowing respiration or the veiled blowing, if the side of the vomica be soft and thin and near the surface, all of which have been before explained; the mucous râle in the neighboring ramifications also occurs, together with the cavernous râle, cough and respiration. The cavernous or *gurgling* is a variety of the mucous ronchus; as its name imports it takes place in an excavation containing a puriform secretion, whether it be pneumonic, gangrenous, or tuberculous; the bubbles are larger and more abundant, and offer to the ear the distinct impression that they occur within a circumscribed cavity. The word *gargouillement*, expresses the same idea; and as there is more of euphony in the sound than in its English synonyme, we shall hereafter adopt its use. The cavernous respiration and cough, produced as they are within a hollow space, convey by the simple expression of the terms the ideas attached to them. Wherever gargouillement is heard, they, with pectoriloquy are found.

Resolution of pneumonic inflammation may occur at any period of the disease. Does it happen before hepatization is established,—the crepitant râle diminishes more and more, and the respiratory murmur becomes more distinct. If indu-



ration has taken place, the crepitant ronchus is substituted for bronchophony and bronchial respiration, and to the former finally succeeds the vesicular murmur of health; and should the affection not yield until the absorption of the purulent infiltration has commenced, the mucous gives place to the crepitant râle, and by and by normal respiration returns to the now healthy tissue; in some instances a slight œdema of the lung (the affected part) continues for a longer or shorter time.

*Pulmonary Apoplexy.*—This is the hæmoptoic engorgement of some, and perhaps the name would be more appropriate than the one here adopted; we have chosen it because it is in more general use. The analogy by which it is retained, is derived rather from the character of the lesion than from its effect. Occasional instances, however, of sudden death have been reported, where a true rupture of some pulmonary vessel was discovered upon examination.

The pathology of pulmonary apoplexy, is a sanguine exhalation into the parenchymatous tissue. Seldom or never is the entire organ affected, but the lesion is confined to a portion of the lung a few inches in extent, and the middle and inferior lobes are oftener than the superior the seats of the disease. The engorgement is sometimes so completely circumscribed, that the parts surrounding it are in a state of perfect health; but this is not always the case, as the infiltration of a sanguineous serosity upon which, indeed, one of the signs depends, has been observed. The engorged portion is of a dark red or brown color, and although granulated, yet is its aspect very different from that of pneumonia; the grey or ash colored appearance is never seen as in that disease, nor are the cellular partitions which mark out and define the several lobes; the tissue is here much harder, and both the bronchiæ and blood-vessels are found not to differ from the general color of the affected part. The centre of the mass often contains a coagulum, and the veins are more or less filled with blood in a state of partial coagulation.

The termination of hæmoptoic engorgement takes place generally by simple resolution; the parenchyma becomes gradually paler and softer, and the murmur of respiration is finally established. When the exhaled blood, however, is not perfectly absorbed and a coagulum remains, morbid alterations similar to those which occur in cerebral apoplexy are detected. The clot acts as a foreign substance; the neighboring tissue softens, suppuration follows, and in this way an excavation may be formed, the signs of which are now known. If ramollissement should not supervene, an accidental membrane is sometimes developed and the coagulum becomes encysted. M. Laennec, the cousin, has shrewdly intimated that this mode of termination may have been mistaken for true melanosis.

Spitting of blood is the most prominent symptom of pulmonary apoplexy, and when it is poured out by the mouthful, as it sometimes is, we may at least *suspect* the character of the disease. But rarely is it thus abundant, and the knowledge of its physical signs becomes then of great importance; for there is an expectoration of blood in other and very different affections, as in phthisis and bronchial hæmorrhage. Indeed, it very often happens that the irritation consequent upon the presence of tubercles determines repeated hæmoptisis; and the subject is then clothed with a double interest,—to both the patient and his physician.

When the engorgement is completely established, percussion yields a dull and flat sound, and there is an entire absence of respiration of all kinds in the engorged part. The crepitant râle is heard whenever the surrounding tissue is in a state of serous infiltration, and the mucous ronchus also exists, depending upon the presence of sanguine exudation in the neighboring bronchial branches. The general and functional symptoms are not mentioned, because they are universally known, and we will not hesitate to admit that cases may occur in which they may throw much light upon the diagnosis.

*Consumption or Phthisis.*—Commence we now a short history of this fell destroyer, whose fearful invasion no mortal arm can arrest, and yet whose flattering and hope-creating progress even to the very grave, would lead his victim to believe that he comes not to kill. The young and the beautiful are they who bow to his relentless decree, and while affection mourns over their too early doom, still is there something in such a fate to soften and hallow the deep gushings of the heaving breast. Some project of ambition may be blasted ere time could hurry on its completion, some dear dream of hope interrupted, some plighted vow may perish which no worldly circumstance could change, some widowed heart may sorrow in its young desolation, and they go down to the tomb in the very spring-time of life; no dross of earth has sullied the soul's first and purest aspirations; the warm burst of youth cherishes and consecrates its friendships till life has ceased, and the "callousness of age" has not yet hardened the heart impatient to be free. Pardon us, if these hasty reflections have crowded themselves upon us here; already have we consigned to earth's embrace one whose virtues endeared her to us, and we even now feel that the same destiny but too surely awaits another!

We will advance the opinion founded upon some observation, that no man, whatever may be his experience or professional acumen, can unequivocally pronounce upon the existence of phthisis in its early stage, if assisted only by its functional and general symptoms. For months may it assume the appearance of simple catarrh, the patient preserving a good mien and his appetite and strength unimpaired; nor would one be led from the character of the expectorated matter to suspect that a fatal disease had commenced. In truth, when the affection has made further advances and veritable pus is secreted, still can we not say with certainty that phthisis exists; for in chronic mucous catarrh, as was before remarked, we may have all the appearances of purulent expectoration. Hæmoptisis, too, which is so frequently but

a symptom of this disease, we feel well convinced has not always awakened that alarm which its repeated occurrence might justify. That spitting of blood may happen, and the patient yet recover entirely so as to enjoy uninterrupted health for years, we surely know ; but here, it is the product of inflammation of the bronchial mucous tissue, or of hæmoptoic engorgement ; and how important is it for the individual's tranquillity and the reputation of his attendant, that the diagnosis should be clear and unembarrassed by even a shade of doubt.

To do more than connect together at this time a few facts in the history of phthisis, is not our intention ; a simple glance, however, at the formation of tubercles will be given, and we shall, as the question requires, relate the various physical signs indicative of its several stages ; signs, which leave us not the slender happiness of suspense.

The very great importance of this mode of examination is further made manifest by the fact, that phthisis may proceed throughout its whole course and terminate fatally, and yet many of its rational symptoms may never have been revealed ; the health is suffering from some cause or other, but there are not symptoms to indicate the lesion. Thus, Portal tells us he has met with cases in which the lung was even destroyed by suppuration, and yet there was no cough and consequently no expectoration ; and in a very recent work published by Dr. Clark, similar instances are reported ; and in one, particularly, where there had not been from the commencement to the end, the slightest cough, the lung upon one side was found crowded with tubercles, and upon the other numerous small cavities, and one large excavation was discovered. Louis offers evidence to the same fact. Besides, the *symptoms* are frequently very much mitigated or even temporarily suspended by the accession of other affections. Acute diarrhœa, dyspepsia, mania, and pregnancy have been found to induce such modifications as those to which we have just alluded. These are its latent forms.

The continuance of the disease is very variable. Bayle traced it through the long period of forty years; sometimes a few weeks are sufficient to cause the patient to succumb; but it is probable that from eighteen months to two years may be regarded as its mean duration. From these facts the division of consumption into its acute and chronic forms is seen to be strictly true, and its earlier or later termination will depend upon the violence of the morbid process, the original feebleness of the subject's constitution, or upon both conjoined. Cases of acute phthisis are by no means rare; the cough is troublesome, even violent; neuralgic pains about the chest, or those produced by the supervention of partial pneumonia or pleurisy occur; and the sympathetic action of the heart and arteries is prolonged and intense. These symptoms are protracted or renewed from time to time, by successive *crops* of tubercles; for while those which were first developed have proceeded to the condition of consolidated masses, or even to ramollissement, others may arise in portions of the lung hitherto untouched.

The chronic form of the disease may be said to last from four to six years or longer. The symptoms are all moderate in degree; the development of tubercle is slow, the number of them generally small, and it is occasionally remarkable to what an extent the patient retains his strength and good appearance. When the stage of tubercular maturation arrives, the resulting cavities are often of moderate extent; and sometimes there is a different transformation, viz. the conversion of tubercle into a chalky or calcareous substance. Two examples of prolonged phthisis have fallen under our observation, in both of which there was a quantity of calcareous matter expectorated; in the one the sputa were seldom seen to be puriform, and in the other, which still exists, they have not yet assumed that aspect. In the acute form we have never remarked a similar fact, nor do we now remember to have seen it noticed in the reports of others. Reasoning, then, from these few data, (not enough, perhaps, to deduce



a certain general conclusion,) we are inclined to the opinion that when chalky concretions are expectorated, we may regard such cases as those which will not speedily terminate; the reasons will be more fully expressed before we have concluded.

Tubercle always, or very nearly so, makes its first appearance in the upper portion of the lung; and it is consequently beneath the clavicle and above the spine of the scapula, that we are to direct our earliest attention, when we proceed to the examination of the physical signs. When speaking of pneumonia, the remark was made, that the lower portion of the lung was more frequently the seat of that affection than any other part; and we drew particular attention to the circumstance for the reason which we shall now mention. In latent pneumonic inflammation particularly, and in the first stage of phthisis, the stethoscope reveals very much the same signs; the respiratory murmur is replaced by bronchial respiration; diffused bronchophony and dullness upon percussion are found, and we have already seen how little is to be gained from a dependence upon general and functional symptoms. Now, the knowledge of the fact, that the one, as a general rule at least, occupies the upper and the other the lower and middle portions of the lung, will assist us in the endeavor to arrive at the true state of things. When, however, the crepitant râle is detected, (belonging as it does to pneumonia,) there can scarcely be room for further doubt; and the importance of the diagnosis is great, inasmuch as the treatment depends upon it; the one is certainly curable if proper measures be employed, while relief of the other is hopeless in the extreme.

Another singular circumstance in relation to phthisis, is that the disease commences in the right much oftener than the left lung. Is there any thing by which we can account for this, in the fact that the right division of the trachea is shorter and possesses a greater diameter than the other? If irritation produced by external agents floating in the atmos-

phere, be considered as the exciting cause of the development of tubercle, we might admit their easier introduction into the right lung upon anatomical principles. But the influence of irritation is a still mooted point, and perhaps the best authorities upon the subject would discard it altogether. In a late number of Johnson's Medico-Chirurgical Journal, there is a review of M. Louis's work upon phthisis very recently published, in which the writer asserts that the *left* lung is said by Louis to be the one in which the disease more frequently begins. We have not yet had an opportunity of seeing the work in question, but we feel assured there must be an error somewhere; for a long time we witnessed the autopsies and heard the clinical lectures at La Pitié, and the impression left upon our mind is, that the right lung, in a vast majority of instances, offered a greater extent of disease than the other; and in six cases observed by us within the few last months, five of this number gave evidences of the correctness of the opinion.

Secondary lesions are scarcely ever absent. The most frequent, perhaps, is met with in the intestines; tubercles are developed similar to those found in the lungs; these sometimes ulcerate and open into the cavity of the peritoneum, and the patient is thus destroyed. Frequency of the intestinal discharges is the first symptom of their existence, and indeed the colliquative diarrhœa of the latter stage of the disease is the result of this cause; the internal coat of the intestine to a greater or less extent is red, and there may also be ramollissement of this tissue. Ulcerations along the course of the trachea and within the larynx, are very common; they are produced by the continual passage of expectorated matter, and the fact would appear to derive proof from their location; the posterior surface of these organs being most generally affected. We here see the reason why phthisical patients often become extremely hoarse; and when ulceration has attacked the vocal cords the voice is nearly extinct. Partial pleurisies arise from the develop-

ment of tuberculous masses in the substance of the membrane, or from consecutive implication by reason of its contiguity to the parenchymatous tissue. In such a case the symptoms and signs are such as have been described under the head of pleuro-pneumonia; the *sudden* accession of pain will also lead us to suspect the true lesion. The integrity of the pleura, too, may be destroyed by tuberculous ramollissement, and a fatal pneumo-thorax be the consequence. Tubercles, simultaneously with their presence in the lungs, have been found in every organ of the body; the muscles themselves do not invariably escape, nor do the bones. A fatty matter is occasionally developed in the hepatic parenchyma, and extreme emaciation gives a ghastly appearance to the unfortunate subject.

Bodies distinct and isolated, or infiltrations into the pulmonary tissue are the forms in which tubercle develops itself. The miliary variety is by far the most common; their size varies, but as the name imports, is generally equal to that of millet seed. There is also much diversity in form, as they are found either round or irregular. When seen in the first stage of formation, they present the appearance of small, greyish, demi-transparent grains, imbedded in the parenchyma of the lung; they are often united in groups from their earliest existence, and still oftener does this arrangement take place by a gradual enlargement, as they proceed towards the stage of maturation. When the transformation commences, a small yellow point is perceptible in the centre of each tubercle, and advances towards the circumference, agreeably to the observation of Laennec; while other and later authorities insist that it may begin in any part of the tubercle. Even after groups are formed, if an incision be made, numerous yellow spots are discoverable, surrounded by the original grey and nearly transparent matter; and when the entire mass has become changed into this yellow substance, the now homogeneous collection assumes the character of *crude* tubercle. The parenchymatous tissue in

which it is situated is still perfectly healthy ; it may undergo, indeed, a physical change which will be alluded to hereafter.

Another variety is the granulated tubercle, which differs from the miliary in several particulars. The size may be about the same, but its transparency is perfect, and it is remarkable for its uniformity of volume ; it is round or oval, seldom or never irregular, and there is not often a union of many individuals by which groups are formed. Whenever they are formed into masses and a division is made with the knife, each tubercle is observed to be still isolated by the intervention of very delicate cellular tissue. After the lapse of some time they become opaque and yellow, and the collection becomes uniform.

The infiltration of a gelatinous looking substance is also one of the modes of tuberculous formation ; but it is rarely seen unless accompanied by one of the varieties already mentioned. It appears in transparent masses not unlike jelly, and nearly of the consistence of cartilage. As the disease advances, these assume a greyish color ; and it is thus beyond a doubt that the grey infiltration is produced, which has been referred to by some as a distinct variety. In this state it is still more consistent than it was originally, and when cut, the surfaces present a firm and smooth aspect. Small yellow points, as in other cases, are developed in various parts of the mass, and as these increase, the whole is finally converted into crude tubercle.

All these forms are probably the result of morbid secretion ; but we shall not here attempt to collect the arguments on either side of the question. That tubercles arise uninfluenced by hereditary predisposition, we are much inclined to doubt ; for we never yet have met with the individual who could not refer to some member of his family as having been affected with a disease similar to his own.

From the state of crude tubercle, the next step is that of ramollissement, which would appear to commence indiffer-

ently at any point of the mass. Sufficiently soft at first to be easily flattened by pressing it between the fingers, its consistency now lessens, and it becomes unctuous to the touch; then more liquid, and may ultimately partake of the appearance of pus. Sometimes a more liquid matter is formed, and caseous particles are intermixed with it. Excavations, varying in extent, result from this ramollissement, and tubercles in their yet crude condition are seen scattered around them. As was before remarked, the transformation is not invariably puriform; sometimes calcareous concretions are formed and appear in the expectorated matter.

As the disease progresses, the ulcerated cavities become larger and more rugged by the gradual softening of neighboring tubercles, and thus approach nearer and nearer to the surface. Portions of pulmonary parenchyma not yet destroyed, frequently extend from one part of the excavation to another, forming, as it were, distinct columns which bear no forced resemblance to the internal structure of the heart. These have been mistaken for bronchial branches, but repeated examination proves that they possess no calibre; the bronchial tubes open upon the sides of the cavity, and there they are arrested. Blood-vessels are seen to creep around the excavation, but their branches, like those of the bronchiæ, extend no further; they are obliterated with the increasing ulceration. After some time a false membrane is observed to form around the walls of the excavation, which, in accordance with the opinion of Bayle, is believed by some to secrete pus; this fluid is also secreted without doubt by the lining membrane of the bronchiæ which open into the cavity, for they are constantly found inflamed. The false membrane is white and opaque, and is sufficiently soft in the general to be scraped off by the handle of the knife; it may be thicker in some points than in others. Occasionally it becomes demi-cartilaginous, and another membrane, as first described, is thrown out beneath it. It oftener happens than otherwise that no membrane is formed; and when this is the



case the sides of the excavation are hardened, and frequently studded with tubercles. Anterior to their maturation the false membrane is sometimes produced, and they thus become encysted.

The extinction of phthisical predisposition we believe to be impossible; but we are willing to admit that it may remain dormant for years, and death from other diseases, in persons thus disposed, may have induced the belief that in them it never existed. And what are we to say to the question, Is Phthisis ever *cured*? That the lesion upon which the symptoms depend, both functional and physical, is *sometimes* arrested, we know, for we have seen one case and read of several others. But it is after all only a suspension of the disease, which may return at a longer or shorter interval, for the predisposition has not been destroyed. Happy, however, the unfortunate who may receive this temporary reprieve.

The tubercular excavation may be obliterated by the formation of a true cicatrix. Laennec and others report several examples of this kind. While the excavation yet existed, the physical signs demonstrated its location; these have passed away with the returning health, and death from some other cause, or the re-appearance of phthisis at some subsequent epoch, has enabled the observer to detect the mode of restitution which nature had adopted. The resulting cicatrix is demi-cartilaginous or cellular, and there is a slight depression in the portion of the lung where it is situated.

But the most usual mode of termination, is perhaps that of the formation of false membrane around the walls of the excavation. The membrane is no longer soft but becomes demi-cartilaginous, and resembles the lining structure of a fistula; the cavity is empty, and pus is no longer secreted from any source; or if it be, it is in consequence of the chronic inflammation of the neighboring bronchial branches which has not yet disappeared. We witnessed, as we have said, one example of *apparent* recovery from phthisis, and this was the form under which the amendment took place.

A large excavation existed at the top of the right lung; pus was expectorated in quantities, and the emaciation was considerable. By and by the symptoms gradually diminished, together with the signs indicative of excavation containing a *fluid*, and the patient began to recover her strength and embonpoint; the cavity however was not obliterated; it was now converted into a fistulous opening as shown by the stethoscope, for the cough and respiration continued to be cavernous.

The sputa of the consumptive patient can never enable us to arrive at a proper conclusion. Like the expectoration of catarrh, this too is at first nothing but mucous; like catarrh still in its chronic form, it subsequently becomes puriform. Rarely does it happen that particles of tubercle are expelled; the secretion ultimately assumes a pale yellow or ash color, and unites into masses in the vessel containing it. Towards the close of the disease it is opaque, and is frequently moulded into large globules, in consequence of having been impacted in the bronchiæ.

The physical signs made manifest by the stethoscope, vary according to the stage of the disease. While the tubercles are yet miliary, anterior to the formation of crude tubercle, the functional symptoms may entirely fail us; and perhaps the same may be said also of the other means, by which alone we could form an opinion. But the condition of things changes materially so soon as the tubercle increases and becomes crude. The surrounding parenchyma rendered more firm and dense by pressure, and the vesicles being prevented by the same cause from receiving their accustomed quantum of air, two modifications in the respiratory function immediately ensue. The respiratory murmur ceases to be heard in proportion to the extent of the cause, and respiration is weakened in the affected part; or the passage of the air through the bronchiæ may be appreciated by the ear to which it is conveyed with more certainty, as the pulmonary tissue is more dense;—in other words, there is bronchial

respiration. A diffused bronchophony too is manifested when the patient speaks, and there is an evident dullness of sound on percussion. After the tubercles have begun to soften, the same signs still persist, because ramollissement has not yet advanced sufficiently far to produce an excavation.

When this however has formed, gargouillement, which is a variety of the mucous râle, is produced both by the cough and inspiration; and as the cavity becomes more empty by expectoration, the respiration and cough are ultimately cavernous. Bronchophony is still heard approaching to pectoriloquy. The resonance too, elicited by percussion, which before was dull, is now clear and distinct, and may indeed be more so than natural; and gargouillement may be made to appear, by gently striking upon that part of the thorax situated immediately over the excavation. When this has approached near to the surface of the lung, the same method of exploration produces a resonance which has been compared to the sound proceeding from a *cracked vessel*. The impression made upon the thoracic parietes is imparted to the superior wall of the cavity, which being suddenly compressed, causes the air to rush with greater or less violence through the small bronchial tubes which communicate with it, and the unassisted ear appreciates the sound which ensues. Blowing respiration, the veiled blowing, and pectoriloquy, are all heard after the cavity has formed, provided other circumstances necessary to their production, at the same time exist, all of which were formerly explained.

When the excavation is complete, that is, when it no longer contains any puriform matter, gargouillement entirely ceases, but the respiration and cough remain cavernous. Pectoriloquy is now heard in its most perfect form if the cavity be not too extensive, for then the resonance of the voice becomes too much diffused; and if the bronchial tubes which open into the excavation are at any time obstructed, it may for the moment be entirely suspended. Should an

opening take place into the cavity of the pleura, pectoriloquy ceases altogether.

Nor, as said above, if the excavation be very large is it heard; but this sign is replaced, if the cavity contains only a small quantity of fluid, by the metallic tinkling and the amphoric sound. The first is produced by the agitation of the air contained in the cavity, when the patient either speaks, coughs, or inspires; the other appears to depend upon the existence of two or more fistulous communications between a similar excavation and the bronchiæ, and is produced by the same means as the first. Under such circumstances, the other signs of a tuberculous cavity are also present, except as we have just remarked, the pectoriloquy.

Having already extended our remarks further than it was our intention originally to have done, we shall say but a few words on the subject of affections of the heart. It has been our wish, however, to lay before the Committee all the most important physical signs, and the diseases which have been selected, appeared to us best calculated to effect this object. For the full completion of this purpose, all that now remains for us to do may be accomplished within the compass of a few pages.

*Pericardium.*—Inflammation of the serous membrane covering and surrounding the heart, may be either acute or chronic; and the product of this inflammation, like that of the pleura, may be a membraniform exudation, or the secretion of a serous fluid or pus; or both the exudation and the liquid effusion may exist at one and the same time. This plastic exudation is rather more consistent than that of pleurisy, and in consequence of being of unequal thickness, it frequently has a mamillated appearance. A general redness of the membrane is less often observed in acute than chronic pericarditis; but the albuminous secretion is spread over both surfaces. Adhesions may take place as in pleurisy. The chronic form of the disease is uniformly attended by a collec-

tion, varying from a few ounces to a pound or more, of a serous or puriform fluid ; sometimes its appearance is lactescent with particles of concrete albumen floating in the mass.

Many have borne testimony to the fact of a singular want of uniformity in the functional symptoms of pericarditis ; several of them belong to other diseases, and in truth no inflammation whatever of the pericardium, has on some occasions been found, where a majority of them were present. The physical signs are more certain ; and when the disease has resulted in liquid effusion, may be said to offer evidences of this condition even to a demonstration.

When the instrument is applied over the region of the heart, the contractions of the ventricles are observed to be at one time strong, then of a feebler character and intermitting, thus coinciding with the intermission of the pulse ; and even while the pulse is small and thready, auscultation manifests a greater force in the action of the heart than natural. If the albuminous exudation be copious, a sound rather duller than natural, which is much augmented if a fluid secretion has taken place, is perceived when we use percussion ; and the friction of the opposite surfaces of the pericardium, (little or no fluid being present,) now covered with a false membrane, gives rise to the *leather sound*, similar to that produced by riding upon a new saddle. This sign when it can be appreciated is pathognomonic, having never been distinguished in any other disease than that of pericarditis.

If the secretion, serous, lactescent, or puriform, exists in considerable quantity, the resonance is eminently dull on percussion. The actions of the heart are tumultuous, and appear to be heard *deep* within the thorax. There is besides an evident prominence of the cardiac region, due to the distention of the pericardium. These signs, if we mistake not, were first promulgated by M. Louis. Corvisart thought he could distinguish very clearly a fluctuation, by pressing with the finger upon the intercostal spaces.

Whoever may have industriously pursued the subject for



himself, or derived his information from the works of those who have had the amplest opportunities for observation, must have arrived at the conclusion, that a correct diagnosis of the various affections of the heart is of all others the most difficult. Whether we form our opinions from general or functional symptoms, or from physical signs conjoined with these, the remark is not the less true; and it is only after the most careful and repeated examinations, that we should venture to pronounce upon the probability of an organic lesion. If general symptoms continue, and above all, if the physical signs persist without alteration, except it be in their intensity, the probability of course becomes the stronger. Cases are recorded in which both the symptoms and the signs have passed away; and there are others where autopsy has revealed a hypertrophy or a dilatation, and yet neither the signs or symptoms have existed in sufficient intensity to induce a belief of the extent to which the organic alteration had advanced. That the means however by which we are to judge are valuable, cannot for a moment be doubted; for they have oftener been observed to belong to a lesion of structure, than to occur uninfluenced by this cause. All that we would insist upon, is a most guarded caution, and a sure knowledge of the fact that the signs are constant.

*Hypertrophy of the Heart.*—An increase in the nutritive function of the heart's muscular structure constitutes the disease denominated hypertrophy. Its tissue is more red and firmer than natural, and the thickness notably augmented. The interventricular partition is frequently involved in the morbid action, and the fleshy columns of the affected ventricle are not always exempt. We give merely the general characters of the lesion.

One of the ventricles may alone be affected, or both at the same time; the hypertrophy may indeed be partial in one or both, or one may be dilated and the other hypertrophied; or in fine there may be dilatation accompanied with increase of nutrition. The different *forms* which the disease

may assume, appear to have been better illustrated by M. Bertin, than by any other observer, and they are these. The sides of the affected cavity may be increased in thickness without the least alteration in its capacity;—this increase of thickness may exist with augmentation of capacity;—and lastly, there may be diminished capacity with unnatural thickness of the ventricular or auricular walls. The second variety here mentioned, can be nothing else, however, than the hypertrophy with dilatation of other writers. These different forms have been named by Bertin, simple, eccentric, and concentric hypertrophy. With the exception perhaps of the second, if it be an example of dilatation conjoined with hypertrophy, there are no physical signs to enable us certainly to distinguish between them.

*Left Ventricle.*—The indications of disease in this ventricle, derived from the physical signs, are referrible to their locality, inasmuch as they are nearly the same for both the ventricular cavities. When the left is affected, it is between the cartilages of the fifth and seventh ribs that we are particularly to direct our examination. If the instrument be here applied, the sounds of the heart's pulsations will be found duller than natural, and so much prolonged that the noise of the auricular contraction is nearly or quite inaudible; the patient feels oftentimes most disagreeably the beating of his heart, the contractions of which if there be no complication of disease, are found to be confined to a limited extent of the thoracic surface; frequently they are scarcely heard beneath the left clavicle. The *impulse* of the heart is so great, that the observer's head is sensibly raised by the impression made upon the cylinder during the time of its systole; and if its parietes be much thickened, there is not only an absence of the respiratory murmur in the præcordial region, but an evident flatness of sound on percussion. The pulse may be strong and full, although the reverse of this may take place. When this last condition exists, can it be referred to the concentric form of hypertrophy? The ca-

capacity of the cavity being diminished, it would of course contain less blood, and less would be thrown into the aorta at any given systole ; and upon this, it seems to us, would depend the increased or diminished volume of the artery. We throw out the idea as merely probable, having no fact upon which to sustain it. Intermissions and irregularities of the pulse are not often observed.

*Right Ventricle.*—When the right ventricle is hypertrophied, its contractions produce the same varieties of sound as those of the left ; but it is over the inferior portion of the sternum that we are to seek for them, as also for the increased impulse. The extent over which they may be heard, is limited as in the former case. There is one physical sign also, which belongs solely to disease of this side of the heart, and that is the swelling of the external jugular veins ; and there is one condition in which, by this sign alone, we are enabled to deduce a correct diagnosis. It sometimes occurs that when the left ventricle is enormously hypertrophied, it is carried forward, and thus becomes anterior. Its contractions are then strongest beneath the sternum ; and was there not an absence of tumefaction in the veins, the location of the disease might easily be mistaken.

The *bellows sound* has been heard both in the heart and arteries, when they have proved to be in a state of perfect health. Upon itself therefore, when not connected with other signs, no reliance should be placed ; nor where the disease is uncomplicated hypertrophy is it perhaps often heard. Should there exist however at the same time a contraction of any of the orifices of the heart from any cause, it may sometimes be appreciated, although it is rarely constant. It would seem the rather to depend according to the opinion of the best informed, upon some vital cause, such as a disturbance in the function of innervation. The *rasp* sound, resembling the noise elicited by rasping a piece of soft wood, is always the result of a physical cause ; an impediment exists to the free passage of the blood through the orifices,

forming a communication between the different cavities, by their simple contraction or the deposition of osseous matter. The *purring* sensation, appreciated by the application of the hand upon the thorax, is felt whenever the rasp sound takes place, and is produced by the same structural derangement. It derives its name from its resemblance to the feeling communicated to the hand when applied to the back of a cat, when she is in the act of purring. These several sounds do not belong of themselves, either to hypertrophy or dilatation of the heart. But when the orifices or valves are affected at the same time, they are present with the other signs. We mention them in this place, because the complication does sometimes occur, and because no further allusion will be made to the lesions of the valvular orifices. Double hypertrophy is recognized by the simultaneous occurrence of the appropriate signs in both the right and left præcordial region.

*Dilatation.*—The anatomical character of this lesion is an unnatural thinness of the sides, and an augmented capacity of the affected cavity; there is also an increased separation of the fleshy pillars in consequence of the dilatation. One side of the heart may be affected, or both at the same time, which is the most frequent form the disease assumes; or there may be dilatation of one side, and hypertrophy of the other.

It ought, perhaps, to have been mentioned before, that in a perfectly healthy heart, its pulsations are scarcely heard beyond the left side of the thorax. When appreciated elsewhere, the consequence of dilatation, the order of succession is as follows, viz. ; on the right anterior, on the left posterior, and on the right posterior side of the chest, and the extent to which the contractions are heard, will serve as the measure of the disease.

*Left Ventricle.*—To distinguish dilatation, we are to be guided by the impulse and the sound produced by the heart's contractions; and they are exactly the reverse of those which occur in hypertrophy. The systole produces little or no im-

pulsion, so little indeed that the hand applied over the region of the heart can in many cases barely appreciate it ; but the *sound* is clear and loud, and may be heard in other parts than the left side of the chest. By using percussion, the resonance is generally found to be natural. The signs belonging to disease of this ventricle, are heard over the left præcordial region ; that is, between the fifth and seventh ribs.

*Right Ventricle.*—The characteristic signs are the same as in dilatation of the left side ; but the instrument must be applied here over the inferior portion of the sternum, where, together with the right side, the sound of the contractions is best heard. In this form of the disease the face is frequently livid, swelling of the jugular veins occurs, and hæmoptysis is a frequent complication. Another, which is very constant both in hypertrophy and dilatation, is an infiltration into the cellular tissue of the abdominal extremities, and is found to a greater extent around the malleoli. The pulse is for the most part soft and weak, and palpitations are more common than in hypertrophy. When the two ventricles are dilated, the physical signs are found in both præcordial regions ; and should the sound of the contractions be heard over the right posterior side of the thorax, the dilatation is extreme.

Hypertrophy of one and dilatation of the other ventricle, are recognized by mixed signs ; and we have only to bear in mind those which attach to each lesion, to form a correct diagnosis ; every thing depends of course upon the location wherein the signs are discoverable.

Dilatation with hypertrophy conjoined, is characterized by both a strong impulse, and a loud clear sound, when the heart contracts. The auricular contractions become sonorous, and are heard as well as the ventricular over a large extent of surface, and it is in this variety of disease, that the actions of the heart are frequently most violent. A careful examination of both cardiac regions will lead to a knowledge of the affected side ; or if both present the proper indications,



the affection is of course general. Affections of the auricles are not very frequent, and perhaps never isolated.

*Aneurism of the Aorta.*—In order more fully to explain the physical signs in aneurism of this vessel, a few lines will be devoted to the anatomical character of the disease. A general dilatation of the affected portion of the artery, constitutes what has been denominated *true* aneurism. The formation of the other variety, known under the name of consecutive *false* aneurism, has been differently explained by different individuals; and for the reason that it is very seldom met with in the thoracic aorta, and because too we are not aware of any signs peculiar to itself, no further reference to it will be made.

When the internal coat of the diseased artery is examined, it is found to be red, not uniformly, but rather in patches, and its integrity is frequently interrupted by a true solution of continuity, from whence result rugosities in greater or less number. Osseous depositions also, are formed between the fibrous and internal coat of the artery, or they may be imbedded in the substance of this last itself. It is probably owing to the inequalities within the artery, produced, as we have mentioned, and thus furnishing an impediment to the free course of the blood, that portions of it are retained and coagula formed. These ultimately become organized, and it is in this way that in large aneurisms, particularly, the fibrous concretions are deposited which are so often found upon dissection. They present themselves in distinct layers, frequently exhibiting the successive stages of organization, and are no doubt, as suggested by Hodgson, the means which nature employs for making reparation as far as it is possible to be accomplished.

The *symptoms* belonging to aneurism, are those of too many other and different affections to place much dependence upon them, and we may almost say as much in relation to its physical signs; although there may be a union of them to such an extent, as to leave but little doubt upon the mind of

any. It may frequently happen that the process of reasoning by exclusion will afford much assistance in forming a correct diagnosis.

When the aneurism is still small, the suspicion of its existence is frequently awakened while the patient may be under examination for a different disease ; for until it has reached a sufficient size to compress, and thus interfere with the functions of some neighboring organ, it may produce no derangement whatever in the œconomy. Should it be accidentally detected before this period, the stethoscope will reveal a *single* pulsation isochronous with that of the pulse, and the bellows sound may frequently be observed in connection with it. The pulsation will be better distinguished under the right clavicle, if the arch of the aorta be aneurismatic. Oftener, however, and this will depend upon the rugose condition of the internal coat, the rasp sound will be detected, *always* accompanied by the purring or gently tremulous sensation communicated to the hand when applied to the thorax ; this arises, as explained elsewhere, from the impediment to the current of the blood. When these signs are noticed and *none other*, there may be aneurism or there may not, and for this reason. Depositions of osseous matter sometimes form upon the internal coat of the artery, without the slightest dilatation being perceptible ; and whenever this is the case the two signs last mentioned must almost inevitably ensue. An instance of this kind we saw at La Pitié, and it was there mistaken for aneurism.

But when the disease has much increased, and the function of respiration is impeded, we have an additional symptom to guide us in the diagnosis ; and if there be also a considerable deposition of fibrinous concretion, the sound upon percussion is manifestly dull. The difficulty in breathing may arise from two causes, and there is a notable difference in the *character* of the oppression. In the one case, there is a constant (while the paroxysm lasts) gasping for breath, with an utter impossibility of satisfying the necessity ; and

in the other, there is a *wheezing* noise accompanying every inspiration, showing most clearly that the tumor is pressing upon some part of the trachea. But in the instance first named, the pressure is exerted upon the pulmonary artery; and the usual quantum of blood flowing through this channel to the lungs, and upon which their regular action of course depends, is thus greatly interrupted. The distinction here drawn is important, for it will lead us to know at what point in the aorta the dilatation commences. If its arch is affected, the trachea will be compressed; if its *ascending* portion, commencing a short distance above the valves, be the seat of disease, the pulmonary artery will be similarly situated; and it is only by the nature of the oppression that the true location of the aneurism can be made manifest. What we here record we have seen, and the autopsy proved its correctness.

The difference in the force of the pulse in the two arms has been regarded as a valuable sign; but it is by no means a constant one, and in truth an impediment to the circulation in both radial arteries may exist at the same time, if the aneurism be sufficiently large to press upon the left subclavian, and the free passage of the blood into the innominate be impeded from any cause.

When the aneurismatic tumor, after a length of time, as it sometimes does, has worn away the sternum and the cartilages of the ribs, and thus shows itself externally, scarcely any doubt of its nature can remain.

The descending thoracic aorta may be affected with aneurism, and the neighboring vertebræ, like the sternum, may suffer from pressure. Pain, often mistaken for rheumatism, is a very constant attendant, and many or all of the physical signs heretofore enumerated, may be detected upon close examination.

In submitting this Essay to the consideration of the Committee, we are aware that many other affections might have

been embraced, in which the use of percussion and the stethoscope are capable of furnishing the most beneficial results. Our little work, too, might perhaps have been enriched, certain it is, it might have been much prolonged, by the full relation of cases taken either from hospital or private practice; but if we have said enough to raise to its deserved elevation in the minds of any, the subject upon which we have ventured to write, we shall feel that we have done something for "the cause." It may also be permitted us to remark, that we have, with but very few exceptions, commented upon no condition of disease which we have not witnessed in life and in death; if we have *learned* from others, we have, in numerous instances, demonstrated for ourselves, and it has been our aim not to transcend, in the smallest degree, the most rigid professional faith. We shall then claim something on the score of experience, and shall now bring to a close our imperfect history of the importance of physical signs. "What is writ, is writ—would it were worthier;"—yet, with all its imperfections, should it be destined to meet the public eye, and thereby lead one member of the profession to avail himself of its utility, it will have amply responded to the ambition of the writer.





